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THE AMERICAN YEAR BOOK

THE AMERICAN YEAR BOOK

A Record of Events and Progress

1911

EDITED BY

FRANCIS G. WICKWARE, B.A., B.Sc.

UNDER DIRECTION OF A SUPERVISORY BOARD
REPRESENTING NATIONAL LEARNED SOCIETIES

Giddings Prof Columbia
Seligman Columbia U. (Prof Ec

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PREFACE

SINCE the publication of the first volume of the AMERICAN YEAR BOOK in January, 1911, the organization for its preparation has gone forward on the same general lines. The number of learned and technical societies which are now included is 38. In some cases the representative of a society has himself prepared the material for the YEAR BOOK for 1912; in other cases he has designated the writers and has supervised the resulting manuscripts; where he has so preferred the writers have been selected at headquarters. As a means of perpetuating the organization the representatives of the societies formed themselves in January, 1911, into the American Year Book Corporation, which is simply an official name for the body of associates who take joint responsibility for this work.

In general the present volume follows the lines of the first volume, except that the analysis of topics has been carefully worked over, some new subjects being introduced, a few dropped out and others combined into a new arrangement. Various members of the Board, representatives of the publishing house and candid readers have assisted in this process by their criticisms.

In the first volume some important topics were summarized and brought up to a point of departure; this process has not been necessary in the present volume, which is intended to cover as nearly as may be the twelve months from about December 1, 1910, to December 1, 1911, with some additions so as to bring the political and governmental story beyond the meeting of Congress. As before, the bulletins of the Thirteenth United States Census have been issued in this statistical work, up to the last possible moment.

The scope of the work remains as described in the preface to the first volume:

"The AMERICAN YEAR BOOK is intended for the needs of writers and searchers of every kind. Because of its inclusion of scientific subjects, it has been necessary to limit the political and statistical material which is the staple of many annual handbooks; the book does not aim to treat everything that could be useful, but throughout to select from the enormous mass of details those things which, in the judgment of experts in that field, are most significant, most permanent in value, most likely to answer the searchers' questions."

"The AMERICAN YEAR BOOK does not aim to be a rival of other annual publications, either foreign or domestic. Details as to elections, the personnel of state and municipal governments, political personalities, societies, and educational, literary, and scientific institutions have deliberately been reduced, in order to make room for material of a kind not found in most of the annuals. The AMERICAN YEAR BOOK appeals first of all to students in all fields, who wish a record of progress, not only in their own but in other departments of human endeavor. It is intended, also, as a handbook for busy men, editors, contributors, professional men, teachers, scientific workers, engineers, practical and business men, who wish to verify or confirm points that arise in their minds; and to serve as a handy body of reference material settling questions of fact. Throughout the work the object of the Corporation and the Managing Editor has been to make the volume convenient for the user; hence the YEAR BOOK is arranged on a plan entirely unique in publications of this general character. It is

intended to make reference easier by subdividing material into departments, by putting cognate subjects into close association, and by liberal cross references, making it easy to turn at once to the discussions relating to any subject. A full and carefully analyzed index is also provided in order to open up all remote connections and relations of a topic. This arrangement by groups of affiliated subjects, instead of haphazard or alphabetical succession of topics, is more convenient, and at the same time more scientific."

A few changes have occurred in the makeup of the Board as will appear in the accompanying list of members and constituent societies. Mr. S. N. D. North, who edited the first volume was, soon after its issue, called into a different field of activity, and Mr. Francis G. Wickware has been duly chosen by the American Year Book Corporation to carry on the work. The directors and other members of the Corporation have constantly kept the YEAR BOOK in mind, and have aided with suggestions and criticisms.

The year has been eventful in many fields of science, and particularly in politics and government; but many of the great changes going on will not be registered by months or years. For instance, the alteration of state constitutions and city charters, so as to bring in new principles of government, is a long and slow process. Such an annual as this can normally register only the part of the movement which happens to fall within its chronological bounds.

No apology is necessary for the treatment of foreign politics and international relations. In Europe, Asia, Africa and America there have been stirring events which must be recorded.

The association of learned societies which is behind the YEAR BOOK expects to improve it from year to year and, therefore, welcomes criticisms from any source, either upon the selection of material, on the method of treatment, or on the formal side of the typography, make-up and conveniences for users.

In this work the societies as such, have no official part and take no official responsibility. The whole system is very elastic, the object in view being simply that the great fields of learning shall be adequately represented by persons who are known by the national societies to be interested in and competent for a share in such work.

SUPERVISORY BOARD AND CONSTITUENT SOCIETIES

THE AMERICAN YEAR BOOK was established in 1910 by conferences of members of national learned societies, acting officially or unofficially in behalf of their societies, and organized as a Supervisory Board. During 1911, the Supervisory Board was incorporated as The American Year Book Corporation, the officers of which are: President, Albert Bushnell Hart; Vice-President, Calvin W. Rice; Secretary and Treasurer, George W. Kirchwey; Directors, Albert Bushnell Hart, William M. Davis, Hastings Hornell Hart, George W. Kirchwey, Alexander Lambert, Calvin W. Rice, John C. Rolfe. The material in this issue of the YEAR BOOK has been prepared under the personal supervision of the following Board:

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THE AMERICAN YEAR BOOK is arranged in thirty-seven departments, under each of which are grouped sections and subsections, treating of related subjects. There is a complete index to the volume, where references to a particular topic will be found grouped together. This index should be consulted freely.

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Professor of Latin, Harvard University. Editor of "Horace," etc. Contributor to philological journals.

Moore, George T., B.S., A.M., Ph.D.: TAXONOMY, PATHOLOGY, AND ECONOMIC BOTANY.
Professor of Plant Physiology and Applied Botany, Washington University, St. Louis, Mo.; Physiologist, Missouri Botanical Garden; Head of Department of Botany, Marine Biological Laboratory, Wood's Hole, Mass. Contributor to technical periodicals.

Morse, E. W., B.A.S.: DAIRYING; LIVE STOCK.
Formerly Professor in Bussey Institution. Editor of animal production and dairying in *Experiment Station Record.* Author of "The Ancestry of Cattle" and "The History of Cattle Breeding."

Nelson, John M., B.S., Ph.D.: ORGANIC CHEMISTRY.
Instructor in Organic Chemistry, Columbia University.

Page, Logan Waller: HIGHWAYS.
Director, United States Office of Public Roads. Author, "The Testing of Road Materials"; also numerous bulletins and papers on road construction.

Palache, Charles, B.S., Ph.D.: MINERALOGY AND PETROGRAPHY.
Assistant Professor of Mineralogy at Harvard University.

Peyser, Herbert F.: MUSIC.
Editor, *Musical America,* New York.

Pray, James Sturgis: LANDSCAPE ARCHITECTURE.
Fellow American Society of Landscape Architects; Assistant Professor of Landscape Architecture, and Chairman Department of Landscape Architecture, Harvard University.

Quinn, Arthur Hobson, B.S., Ph.D.: AMERICAN LITERATURE.
Professor of English, University of Pennsylvania; Secretary of the Association of Colleges and Preparatory Schools of the Middle States and Maryland. Editor of "The Fair Maid of Bristow," George Eliot's "Silas Marner," Poe's Poems, with introduction and notes; also contributor to modern language periodicals.

Ransome, Frederick Leslie, B.S., Ph.D.: ECONOMIC GEOLOGY.
Geologist, United States Geological Survey; Associate Editor, *Economic Geology.* Author of monographic geological reports on mining districts in western United States, and contributions to scientific periodicals.

Reamer, Lawrence: DRAMA.
Dramatic Critic, The New York *Sun.*

Reid, Henry Fielding, C.E., Ph.D.: EARTHQUAKES AND VOLCANOES.
Professor of Dynamical Geology and Geography, Johns Hopkins University; Special Expert in Earthquake Records, United States Geological Survey; Delegate of the United States to the International Seismological Association. Author of "The California Earthquake," Vol. II., etc.

Rundell, Oliver S., LL.B.: CRIMINAL LAW.
Instructor in Law, University of Wisconsin.

Saunders, Frederick A., Ph.D.: PHYSICS.
Professor of Physics, Syracuse University.

Scott, C. P. G.: SIMPLIFIED SPELLING.
Secretary Simplified Spelling Board, New York. Etymological editor "Century Dictionary."

Seligman, Edwin R. A., Ph.D., LL.D.: TAXATION OF CORPORATIONS.
McVickar Professor of Political Economy, Columbia University. Author of "Principles of Economics," "Essays on Taxation," "The Shifting and Incidence of Taxation," "The Economic Interpretation of History," "Progressive Taxation in Theory and Practice," "The Income Tax," and other volumes on economic topics.

Sherman, H. C., Ph.D.: CHEMISTRY OF FOODS AND NUTRITION.
Professor of Food Chemistry in Columbia University; formerly collaborator in nutrition investigations, Department of Agriculture. Author of "Methods of Organic Analysis," "Chemistry of Food and Nutrition," etc.

Shorey, Paul, Ph.D., LL.D.: GREEK PHILOLOGY.
Professor of Greek, University of Chicago. Contributor to philological journals.

Shumway, Daniel Bussier, B.S., Ph.D.: GERMANIC LITERATURE.
Professor of German Philology, University of Pennsylvania. Author of "The Nibelungenlied," translated into English prose; and numerous scientific articles.

Smith, Anna Tolman: EDUCATION AND EDUCATIONAL INSTITUTIONS.
Specialist, Bureau of Education, Washington, D. C.; Associate Editor "Cyclopedia of Education." Contributor to educational periodicals.

Smith, Ethel Marion: FISHERIES.
Editor, United States Bureau of Fisheries; Assistant Recording Secretary of the American Fisheries Society. Contributor to the *Journal* of the Washington Academy of Sciences.

Start, Edwin Augustus, A.B., A.M.: FORESTRY.
Executive Secretary, American Forestry Association. Editor, *American Forestry.* Journalist and educator. Contributor to magazines.

Steuart, William M., LL.B., LL.M.: MANUFACTURES.
Chief Statistician for Manufactures, United States Census. Author of reports of various censuses on manufactures, electrical industries, transportation by water, fisheries, etc.

Stoughton, Bradley, B.S., Ph.B.: IRON AND STEEL.
Consulting Engineer. Author of "Metallurgy of Iron and Steel."

Todd, David, Ph.D.: ASTRONOMY.
Professor of Astronomy and Navigation, and Director of the Observatory, Amherst University.

Tomkins, Calvin, A.B.: DOCKS, WHARVES AND WATERFRONTS.
Commissioner, Department of Docks and Ferries, New York City.

Walker, William H., A.M., Ph.D.: INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING.
Professor of Industrial Chemistry and Director of the Research Laboratory of Applied Chemistry, Massachusetts Institute of Technology. Author of many scientific and technical articles.

Ward, Robert DeCourcy, A.M.: METEOROLOGY AND CLIMATOLOGY.
Professor of Climatology, Harvard University. Author of "Practical Exercises in Elementary Meteorology," "Climate, Considered Especially in Relation to Man"; translator of Hann's "Handbuch der Klimatologie," 2d Ed., Vol. I. Contributor to geographical periodicals.

Weitenkampf, Frank: ETCHING.
Chief, Art and Prints Division, New York Public Library.

Whitman, Roger B.: AERONAUTICS.
Author of "Motor-car Principles," and contributor to technical periodicals.

Wickware, Francis Graham, B.A., B.Sc.: FOREIGN HISTORY; PANAMA CANAL; MISCELLANEOUS.
Managing Editor, THE AMERICAN YEAR BOOK.

Wight, Frank Clinton, C.E.: CIVIL AND HYDRAULIC ENGINEERING.
Associate Editor, *Engineering News*. Contributor to the technical press.

Wilbur, Cressy L., Ph.M., M.D.: VITAL STATISTICS.
Chief Statistician of Vital Statistics, Census Office, Washington. Author of State and Federal Registration Reports and Bulletins.

Willcox, Walter F., Ph.D., LL.D.: APPORTIONMENT; PROBLEMS OF POPULATION.
Professor of Economics and Statistics, Cornell University. Author of "The Divorce Problem, a Study in Statistics," and "Supplementary Analysis and Derivative Tables, Census Office, 1906," and many papers on economic topics.

Wilson, Edwin Bidwell, Ph.D.: MATHEMATICS.
Associate Professor of Mathematics, Massachusetts Institute of Technology. Author of "Gibbs's Vector Analysis" and "Advanced Calculus." Contributor to periodicals.

Wilson, Eugene Benjamin: COAL, COKE AND PETROLEUM.
Editor, *Mines and Minerals*. Author, "Practical and Theoretical Mine Ventilation," "Cyanide Processes," "Chlorination Process," etc.

Wilson, Harry Langford, A.M., Ph.D., LL.D.: EPIGRAPHY.
Professor of Roman Archæology and Epigraphy, Johns Hopkins University. Editor of "Satires of Juvenal"; Associate Editor of the *Classical Weekly*. Contributor to technical periodicals.

Woodruff, Clinton Rogers, Ph.B., LL.B.: CIVIL SERVICE; MUNICIPAL GOVERNMENT.
Secretary National Municipal League. Editor, "City Government by Commission." Contributor to magazines and periodicals.

Woodworth, Jay Backus, B.S., F.G.S.A.: DYNAMICAL GEOLOGY.
Assistant Professor of Geology, Harvard University; formerly of the United States Geological Survey. Director Shaler Memorial Expedition to Brazil and Chile (1908-09). Author of reports on geology, "Life of Dr. C. T. Jackson," etc.

Wyman, Walter, A.M., M.D., LL.D.: PUBLIC HEALTH AND HYGIENE.
Surgeon-General, Public Health and Marine Hospital Service; first vice-president, American Medical Association; Medical Editors' Association; chairman, International Sanitary Bureau of American Republics. Author of many pamphlets on public health and sanitation and 20 reports of the Public Health and Marine Hospital Service; also of "A Cruise on the United States Practice Ship, *S. P. Chase*." (*Died, Nov. 21, 1911.*)

THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

I. INTERNATIONAL STATISTICS

A great number of statistical tables appear in the text of the AMERICAN YEAR BOOK, in close association with the discussion of the subjects to which they relate. In Department I, *International Statistics*, and Department II, *National Statistics*, certain tables are brought together for condensation of statement and convenience of reference.

TABLE I

THE WORLD'S AREA AND POPULATION

	Square Miles.	Ratio.	Population. *In Millions.*	Ratio to Total Population.
Arctic	4,636,784	2.3	.....	.....
Antarctic	9,003,091	4.7	.....	.....
Atlantic	38,639,876	19.5	.....	.....
Indian	25,502,318	13.3	.....	.....
Pacific	65,687,780	32.2	.....	.....
Five Oceans	143,469,849	73.0	.....	.....
Europe	3,902,627	2.0	437	26.9
Africa	12,171,561	6.1	126	7.7
Asia	16,074,188	8.1	851	52.3
Oceania	4,250,386	2.1	51	3.1
N. America	10,046,367	5.1	116	7.2
S. America	7,148,377	3.6	45	2.8
Five Earth Divisions	53,593,506	27.0	1,626	100.0
Total	197,063,355	100.0	.....	.....

NOTE.—The accompanying table was compiled by the late M. Emile Levasseur, Vice President of the International Institute of Statistics, who said in regard to it:

The area of the oceans is approximate. That of the divisions of the earth differs according to the position which writers assign to each part (consequently the population also differs). For example, the German geographers assign to Asia almost the whole of Malay, while we make it a part of Oceania; many geographers do not make Oceania a separate division, but combine Australia and the islands of the Southern Pacific Ocean. They also make a separate division of the northern polar regions. We attach these regions to the three parts of the world to the north of which they are situated. The German geographers do not include Iceland in Europe; but many assign to Europe the part of the European government of Russia situated east of the Ural Mountains, as well as the provinces of the kingdoms of Portugal (Madeira) and Spain (Canaries, etc.) situated in Africa.

II. POPULATION OF THE WORLD ACCORDING TO RACE

(Estimate by John Bartholomew, F.R.G.S., Edinburgh, 1910)

Race.	Location.	Number.	Race.	Location.	Number.
Indo-Germanic or Aryan (white)	Europe, Persia, etc.	625,000,000	Hottentot and Bushman (blk.)	South Africa	150,000
Mongolian or Turanian (yellow & brown)	Greater part of Asia	630,000,000	Malay and Polynesian (brown)	Australasia and Polynesia	35,000,000
Semitic or Hamitic (white)	North Africa, Arabia	65,000,000	American Indian (red)	North & South America	15,000,000
Negro and Bantu (black)	Central Africa	150,000,000	Total		1,520,150,000

III. EUROPEAN LANGUAGES SPOKEN

(Mulhall's Estimates)

Languages.	Number of Persons Spoken by.		Proportion of the Whole.		Languages.	Number of Persons Spoken by.		Proportion of the Whole.	
	1801.	1901.	1801.	1901.		1801.	1901.	1801.	1901.
English	20,520,000	130,300,000	12.7	29.2	Portuguese	7,480,000	15,000,000	4.7	3.3
French	31,450,000	52,100,000	19.4	11.7	Russian	30,770,000	85,000,000	19.0	19.0
German	30,320,000	84,200,000	18.7	18.8					
Italian	15,070,000	34,000,000	9.3	7.6	Total	161,800,000	447,100,000	100.0	100.0
Spanish	26,190,000	46,500,000	16.2	10.4					

IV. VALUES OF FOREIGN COINS, OCTOBER 1, 1911

Country.	Standard.	Monetary Unit.	Value.	Country.	Standard.	Monetary Unit.	Value.
Argentina	Gold	Peso	$0.965	France	Gold	Franc	.193
Austria-Hungary	"	Crown	.203	German Empire	"	Mark	.238
Belgium	"	Franc	.193	Great Britain	"	Pound ster	4.8665
Bolivia	Silver	Boliviano	.389	Greece	"	Drachma	.193
Brazil	Gold	Milreis	.546	Haiti	"	Gourde	.965
British possessions N. A.	"	Dollar	1.000	India (British)	"	[a]Pound ster	4.8665
British Honduras	"	"	1.000	Italy	"	Lira	.193
Central American States:				Japan	"	Yen	.498
Costa Rica	"	Colon	.465	Liberia	"	Dollar	1.000
Guatemala	Silver	Peso	.365	Mexico	"	Peso	.498
Honduras	"	"	.365	Netherlands	"	Florin	.402
Nicaragua	"	"	.365	Newfoundland	"	Dollar	1.014
Salvador	"	"	.365	Norway	"	Crown	.268
Chile	Gold	"	.365	Panama	"	Balboa	1.000
China	Silver	Tael	.608	Persia	Silver	[b]Kran	.0896
		Dollar:		Peru	Gold	Libra	4.8665
		Hongkong	.413	Philippines	"	Peso	.500
		British	.413	Portugal	"	Milreis	1.080
		Mexican	.416	Russia	"	Ruble	.515
Colombia	Gold	Dollar	1.000	Spain	"	Peseta	.193
Denmark	"	Crown	.268	StraitsSettlem'ts	"	Dollar	.5677
Ecuador	"	Sucre	.487	Sweden	"	Crown	.268
Egypt	"	Pound (100 piasters)	4.943	Switzerland	"	Franc	.193
				Turkey	"	Piaster	.044
Finland	"	Mark	.193	Uruguay	"	Peso	1.034
				Venezuela	"	Bolivar	.193

[a] The sovereign is the standard coin of India, but the rupee ($0.324⅓) is the current coin, valued at 15 to the sovereign.

[b] The gold kran has a value of $0.1704. The currency is silver circulating above its market value.

Note.—The coins of silver standard countries are valued by their pure silver contents at the average market price of silver for the three months preceding the dates of this table. France, Belgium, Italy, Greece, Roumania and Switzerland constitute what is known as the Latin Union, and their coins are alike in weight and fineness, occasionally differing in name. The same system has been in part adopted by Spain, Servia, Bulgaria, and Russia, but they have not joined the Union.

V. STATISTICS OF THE PRINCIPAL COUNTRIES OF THE WORLD

Countries.	Sq. Miles.	Population.	Capitals.	Present Head.	Acceded.
Abyssinia	432,432	5,000,000	Adis Ababa.	Lidj Eyassu	May 15,'11
Afghanistan	250,000	4,500,000	Kabul	Habibullah Khan	Oct. 3,'01
Argentina	1,139,979	6,989,023	Buenos Aires	Roque Sáenz-Peña	Oct. 12,'10
Australia	2,974,581	4,449,495	Melbourne	Lord Denman	
Austria	115,903	28,567,898	Vienna	Franz Josef I.	Dec. 2,'48
Austria-Hungary	241,333	49,418,598	Vienna; Budapest.	Franz Josef I.	Dec. 2,'48
Baluchistan	131,855	1,049,808	Kalat.	Mir Mahmud KhanII	Nov. 10,'94
Belgium	11,373	7,451,903	Brussels.	Albert I.	Dec. 23,'09
Bolivia	708,195	2,267,935	Sucre.	Eliodoro Villazon.	Aug. 6,'09
Brazil	3,218,130	20,515,000	Rio de Janeiro.	Marshal Hermes da Fonseca.	Nov. 15,'10
British Empire	11,454,862	397,261,509	London.	George V.	May 6,'10
Bulgaria	24,380	4,284,844	Sofia.	Ferdinand.	Aug. 14,'87
Canada	3,745,574	6,504,900	Ottawa.	H. R. H. the Duke of Connaught.	Oct. 13,'11
Chile	291,500	3,500,000	Santiago.	Ramon Barros Luco.	Dec. 23,'10
China	4,277,170	439,214,000	Peking.	Hsuan-Tung.	Dec. 3,'08
Colombia	438,436	4,320,000	Bogota.	Carlos E. Restrepo.	Aug. 7,'10
Costa Rica	23,000	368,780	San Jose.	Ricardo Jiminez.	May. 8,'10
Cuba	44,164	2,161,622	Havana.	Jose Miguel Gomez.	Jan. 28,'09
Denmark	15,582	2,756,873	Copenhagen.	Frederick VIII.	Jan. 29,'06
Ecuador	116,000	1,500,000	Quito.	Carlos Freile.	Dec. 22,'11
Egypt	400,000	11,287,359	Cairo.	Abbas Hilmi.	Jan. 8,'92
France	207,054	39,376,000	Paris.	C. A. Fallières.	Jan. 17,'06
Germany	208,780	64,903,423	Berlin.	Wilhelm II.	June 15,'88
Great Britain	121,391	45,216,741	London.	George V.	May 6,'10
Greece	25,014	2,666,000	Athens.	George I.	Mar. 18,'63
Guatemala	48,290	1,992,000	New Guatemala.	Manuel E. Cabrera.	Feb. 1,'05
Haiti	10,204	2,000,000	Port-au-Prince.	Cincinnatus Leconte.	Aug. 16,'11
Honduras	46,250	553,446	Tegucigalpa.	Manuel Bonilla.	Oct. 29,'11
Hungary	125,430	20,850,700	Budapest.	Franz Josef I.	Dec. 2,'48
India	1,773,088	315,000,000	Calcutta.	Sir Charles Hardinge.	Nov. '10
Italy	110,659	34,686,653	Rome.	V. Emanuele III.	July 29,'00
Japan	175,540	50,751,919	Tokio.	Mutsuhito.	Feb. 13,'67
Korea	86,000	12,959,981	Seoul.	Count Tirauchi.	'10
Liberia	40,000	2,100,000	Monrovia.	Arthur Barclay.	Jan. '04
Madagascar	226,015	2,701,000	Tananarivo.	M. Picquié.	'10
Mexico	767,000	15,063,207	Mexico.	Francisco I. Madero.	Nov. 6,'11
Monaco	8	19,121	Monaco.	Albert I.	Sept. 10,'89
Montenegro	3,630	250,000	Cettinje.	Nicholas I.	Aug. 14,'60
Morocco	219,000	5,000,000	Fez.	Mulai Hafid.	Aug. 25,'08
Netherlands	12,648	5,898,429	The Hague.	Wilhelmina.	Sept. 6,'98
Nicaragua	49,200	600,000	Managua.	Gen. Luis Mena.	Oct. 7,'11
Norway	124,130	2,392,698	Christiania.	Haakon VII.	Nov. 18,'05
Panama	32,380	336,742	Panama.	Pablo Arosemena.	Oct. 5,'10
Paraguay	171,815	800,000	Asuncion.	Liberato Rojas.	July 6,'11
Persia	628,000	9,500,000	Teheran.	Mhd. Ahmed Mirza.	July 16,'09
Peru	679,600	4,500,000	Lima.	Augusto B. Leguia.	Sept. 24,'08
Portugal	35,490	5,500,000	Lisbon.	Manoeb Arriaga.	Aug. 25,'11
Roumania	50,720	5,956,690	Bucharest.	Carol I.	Mar. 26,'81
Russia	8,647,657	160,095,200	St. Petersburg.	Nicholas II.	Nov. 1,'94
Salvador	7,225	1,707,000	San Salvador.	Manuel E. Araujo.	Mar. 2,'11
Santo Domingo	19,325	673,611	Santo Domingo.	Señor Victoria (prov.)	Dec. 2,'11
Servia	18,650	2,688,747	Belgrade.	Peter I.	June 25,'03
Siam	195,000	6,250,000	Bangkok.	Chowfa Maha Vajiravudh.	Oct. 23,'10
South Africa	473,184	5,637,849	Pretoria; Capetown.	Viscount Gladstone.	May 30,'10
Spain	194,783	19,503,068	Madrid.	Alphonso XIII.	May 17,'86
Sweden	172,876	5,476,441	Stockholm.	Gustav V.	Dec. 8,'07
Switzerland	15,975	3,559,349	Berne.		
Tunis	45,779	1,500,000	Tunis.	Mehemed Ben Nasr Bey.	May 12,'06
Turkey	1,565,020	35,400,000	Constantinople.	Mehemed V.	Apr. 27,'09
United States	3,567,387	91,402,151	Washington.	W. H. Taft.	Mar. 4,'09
Uruguay	72,210	1,112,000	Montevideo.	Jose Batlle y Ordonez.	Mar. 1,'11
Venezuela	393,976	2,685,606	Caracas.	J. V. Gomez.	Apr. 27,'08

VI. REVENUES, EXPENDITURES AND INDEBTEDNESS OF PRINCIPAL COUNTRIES OF THE WORLD

Country.	Year.	Revenue and Expenditure.(a)		Funded and Unfunded Debt.	Interest Charges.
		Revenue.	Expenditure.		
Argentina	1911	$136,915,000	$137,394,000	$639,516,000	$30,600,000
Australia	1909–10	(b) 36,496,000	36,496,000	(d) 1,253,726,000	(d) 50,849,000
Austria-Hungary.	1910	90,931,000	87,799,000	1,059,750,000	42,752,000
Austria	1911	572,157,000	572,094,000	1,408,191,000	54,526,000
Hungary	1911	339,519,000	339,509,000	1,159,554,000	58,887,000
Belgium	1911	127,134,000	127,026,000	719,414,000	28,321,000
Congo	1911	8,222,000	11,980,000	43,627,000	.....
Bolivia	1910	5,271,000	5,407,000	11,427,000	754,000
Brazil	1910	(b) 174,010,000	(b) 192,415,000	815,032,000	28,639,000
Bulgaria	1910	33,244,000	33,211,000	108,327,000	7,485,000
Canada	1910	(b) 101,504,000	(b) 79,412,000	470,663,000	14,898,000
Chile	1910	(b) 64,049,000	(b) 73,943,000	164,845,000	6,769,,000
China	1911	193,771,000	186,675,000	636,822,000	33,696,000
Colombia	1911	9,780,000	11,393,000	25,259,000	1,440,000
Costa Rica	1909–10	(b) 5,334,000	(b) 5,334,000	13,009,000	628,000
Cuba	1910	(b) 41,615,000	(b) 40,593,000	62,083,000	4,339,000
Denmark	1910	(b) 36,247,000	(b) 35,692,000	80,870,000	2,580,000
Ecuador	1909	(b) 7,967,000	(b) 7,575,000	21,175,000	1,242,000
Egypt	1911	76,816,000	74,145,000	462,182,000	17,651,000
France	1911	846,631,000	846,587,000	6,280,791,000	186,016,000
Germany	1911-12	696,100,000	696,100,000	1,224,808,000	68,008,000
Greece	1910	27,321,000	27,025,000	163,192,000	5,966,000
Guatemala	1910	(b) 3,094,000	(b) 2,758,000	18,488,000	1,716,000
Haiti	1910–11	5,019,000	4,978,000	48,912,000	2,563,000
Honduras	1909–10	(b) 1,568,000	(b) 1,620,000	113,140,000	220,000
India (British)	1910-11	391,939,000	374,958,000	1,294,287,000	50,119,000
Italy	1911–12	479,431,000	469,467,000	2,604,363,000	97,177,000
Japan	1911–12	283,314,000	283,314,000	1,319,897,000	73,533,000
Korea	1911–12	24,273,000	24,273,000	14,569,000	863,000
Liberia	1910	(b) 370,000	(b) 370,000	1,290,000	.....
Mexico	1910	(b) 52,952,000	(b) 47,324,000	218,447,000	13,073,000
Morocco	1910	2,141,000	2,141,000	59,422,000	.....
Netherlands	1911	78,083,000	85,930,000	448,982,000	14,921,000
New Zealand	1909–10	(b) 55,150,000	(b) 54,540,000	364,942,000	11,668,000
Nicaragua	1909–10	(b) 1,518,000	(b) 1,205,000	9,742,000	394,000
Norway	1910	(b) 32,761,000	(b) 31,289,000	88,252,000	4,144,000
Panama	1910	(b) 3,371,000	(c) 3,439,000	125,000	9,000
Paraguay	1910	2,154,000	2,567,000	5,821,000	835,000
Persia	1909–10	7,786,000	7,786,000	31,966,000	1,875,000
Peru	1910	(b) 13,606,000	(b) 13,068,000	26,253,000	542,000
Portugal	1909–10	(b) 78,144,000	(b) 81,131,000	875,064,000	35,248,000
Roumania	1910–11	88,988,000	88,988,000	299,758,000	17,121,000
Russia	1912	(c) 1,532,255,000	(c) 1,532,255,000	4,650,607,000	208,345,000
Finland	1909	(b) 35,698,000	(b) 34,179,000	34,683,000	1,595,000
Salvador	1910	(b) 5,301,000	(b) 5,282,000	13,149,000	1,317,000
Santo Domingo	1910	(b) 4,706,000	(b) 4,645,000	13,459,000	1,200,000
Servia	1911	(c) 23,186,000	(c) 23,176,000	131,135,000	6,503,000
Siam	1910–11	(c) 23,598,000	(c) 27,059,000	10,135,000	456,000
Spain	1910	(b) 226,242,000	(b) 217,745,000	1,911,254,000	78,818,000
Sweden	1911	61,080,000	61,080,000	141,083,000	5,119,000
Switzerland	1910	(b) 29,747,000	(b) 30,774,000	24,015,000	1,215,000
Turkey	1911–12	125,301,000	159,426,000	570,640,000	79,784,000
United Kingdom	1910–11	(b) 992,039,000	(b) 837,017,000	3,567,498,000	119,492,000
United States	1910–11	(b) 997,587,000	(b) 964,086,000	1,015,784,000	21,311,000
Philippine Is	1911	(b) 12,723,000	(b) 13,689,000	16,125,000	892,000
Uruguay	1910–11	(c) 24,145,000	(c) 24,127,000	138,793,000	8,527,000
Venezuela	1911–12	(c) 9,868,000	(c) 9,850,000	38,744,000	1,924,000

(a) Budget appropriations, unless stated otherwise. (b) Actual revenue and expenditure. (c) Estimates submitted to the legislature. (d) States.

Country.	Foreign Commerce.					Length of Railways.		Telegraphs.			Post-offices.
	Year.	Imports of Merchandise.	Imports from U. S.	Exports of Merchandise.	Exports to U. S.	Date.	Miles.	Date.	Length of Line.	Length of Wire.	
Argentina	1910	339,459,000	42,776,982	359,584,000	32,050,322	1910	18,166	1908	34,960	92,300	2,817
Australia	1910	289,344,000	31,510,496	349,937,000	13,953,627	1909	16,411	1909	42,298	.....	7,698
Austria-Hungary	1910	579,129,000	16,241,191	490,977,000	18,022,396	1908	25,852	1909	43,975	232,993	14,911(*a*)
Belgium	1910	823,137,000	38,910,722	657,634,000	37,559,056	1909	2,942	1909	4,618	24,371	1,519
Bolivia	1910	18,135,000	703,644	29,080,957	345	1910	635	1910	3,111	.....	198(*a*)
Brazil	1910	235,575,000	24,988,337	310,006,000	103,716,231	1910	13,279	1908	36,199	73,124	3,246
Bulgaria	1910	34,230,000	129,042	24,907,000	365,281	1910	1,082	1909	3,687	7,500	2,070
Canada	1911	462,041,330	284,325,321	290,000,210	112,015,076	1910	24,731	1910	36,517	145,997	12,887
Chile	1910	108,582,279	9,991,278	120,021,919	20,381,158	1910	3,573	1909	24,805	.....	1,090
China	1910	302,989,000	16,710,289	248,498,000	34,521,525	1906	3,746	1909	26,397	42,985	4,258
Colombia	1910	17,025,637	4,636,682	17,625,152	7,703,281	1910	614	1908	10,360	.....	448
Costa Rica	1910	8,152,501	3,178,835	8,644,504	3,529,945	1910	427	1910	1,472	.....	199
Cuba	1910	103,675,581	57,783,617	150,909,020	127,827,395	1910	2,123	1910	5,065*	.....	487
Denmark	1909	152,993,000	14,689,000	119,740,000	2,310,000	1908	2,141	1908	2,320	8,781	1,488
Dominican Republic	1910	6,257,691	3,699,637	10,849,623	2,840,952	1910	241	1910	.....	1,028	81(*a*)
Ecuador	1910	8,024,105	2,008,838	13,666,371	3,512,444	1910	350	1910	2,608	.....	81(*a*)
Egypt	1909	109,885,000	985,000	128,895,000	9,404,000	1909	3,503	1909	4,606	20,845	1,485
France	1910	1,384,453,000	115,709,548	1,203,124,000	121,810,225	1908	29,716	1909	110,083	422,022	13,631
Germany	1910	2,126,322,000	258,307,490	1,778,969,000	166,536,719	1908	36,686	1909	135,352	396,487	40,769
Great Britain	1910	2,795,785,000	550,626,404	2,094,467,000	270,889,409	1909	23,280	1910	.....	1,170,125(*b*)	23,925
Greece	1908	29,844,000	1,387,000	21,368,000	1,168,000	1908	771	1908	5,645	10,247	1,147(*c*)
Guatemala	1909	5,251,317	2,181,859	10,079,219	2,739,075	1910	450	1909	4,196 (*b*)	.....	192
Haiti	1909	5,880,678	4,271,046	11,008,483	681,919	1910	64	1910	124	.....	30
Honduras	1910	3,019,416	1,707,692	2,571,916	2,522,566	1910	171	1908	.....	2,843	264(*d*)
India (British)	1910	433,803,000	7,638,981	664,699,000	43,428,214	1909	31,490	1910	72,746	287,266	18,075(*a*)
Italy	1910	618,507,000	52,697,405	387,597,000	49,296,827	1910	10,640	1908	32,145	159,473	9,823
Japan	1910	230,814,000	26,566,178	226,636,000	73,763,695	1909	5,019	1909	18,744	94,620	7,784
Korea	1909	18,251,000	1,194,000	8,092,000	34,000	1907	688	1908	3,192	6,759	486
Liberia	1908	966,000	50,000	884,000	1,000	.....	.....	.....	.....	.....	.....
Mexico	1910	102,506,000	63,858,939	146,289,000	61,092,502	1910	15,260	1910	.....	46,112	2,856
Netherlands	1910	1,299,941,000	84,867,181	1,053,575,000	30,682,712	1909	1,908	1909	4,574	22,101	1,445(*e*)
New Zealand	1910	74,629,951	6,394,842	104,450,191	3,835,620	1911	2,761	1910	10,901	34,788	2,075(*c*)
Nicaragua	1909	2,583,257	1,341,692	3,989,428	1,677,010	1910	171	1910	.....	3,637	135
Norway	1910	104,196,000	6,384,681	71,135,000	7,288,674	1910	1,912	1910	12,125	90,645	5,099(*a*)
Panama	1910	10,056,993	21,530,112	1,769,330	2,868,906	1910	202	1910	.....	.....	96
Paraguay	1910	5,374,837	60,581	4,419,497	26,987	1910	155	1907	1,967	.....	221
Persia	1910	39,642,000	4,268	33,289,000	778,840	1906	34	1908	6,630	9,698	144
Peru	1910	22,508,021	4,851,410	31,144,250	8,507,763	1910	1,656	1910	6,479	.....	658
Portugal	1909	69,943,000	3,402,000	33,448,000	6,283,000	1909	1,758	1907	5,860	13,299	3,682(*a*)
Roumania	1908	79,913,000	503,000	73,230,000	12,000	1910	2,207	1909	4,812	13,567	2,968

VII. COMMERCE OF THE PRINCIPAL COUNTRIES OF THE WORLD (*Continued*)

Country.	Foreign Commerce.					Length of Railways.		Telegraphs.			Post-offices.
	Year.	Imports of Merchandise.	Imports from United States.	Exports of Merchandise.	Exports to United States	Date.	Miles.	Date.	Length of Line.	Length of Wire.	
Russia	1910	490,825,000	19,533,761	712,584,000	13,828,265	1909	44,950	1908	119,117	415,004	13,983(*e*)
Finland	1908	70,163,000	.....	46,894,000	.....	1908	1,946	1909	.....	.....	1,954
Salvador	1910	3,745,249	1,560,674	7,297,836	1,241,128	1910	97	1910	2,521	.....	101
Servia	1909	14,192,000	168,000	17,945,000	580,000	1909	430	1909	2,140	6,030	1,502
Siam	1909–10	25,663,000	543,000	37,705,000	2,000	1909	650	1909	2,900	.....	113 (*a*)
Spain	1910	191,159,000	22,539,559	182,889,000	20,345,333	1909	9,020	1908	22,024	.....	4,845
Sweden	1909	165,304,000	6,630,429	126,759,000	5,652,197	1909	8,451	1909	24,376 (*b*)	190,927(*b*)	3,739
Switzerland	1910	330,775,000	775,540	230,803,000	25,512,309	1910	3,131	1910	2,280	16,015	1,953
Turkey	1909	139,059,000	2,069,000	81,576,000	10,078,000	1909	4,075	1906	28,907	49,029	1,312
United States	1911	1,527,966,105	.....	2,013,549,025	.....	1910	249,992	1909	.....	1,639,359	59,580(*d*)
Philippine Islands	1909–10	37,068,000	10,775,000	39,864,000	18,742,000	1908	292	1909	4,423	.....	540
Uruguay	1910	42,796,706	4,610,715	43,333,124	4,877,412	1910	1,472	1911	.....	4,849(*c*)	1,018
Venezuela	1910	12,387,551	3,086,126	17,948,571	7,285,634	1910	542	1910	.....	4,902	289

(*a*) 1908. (*b*) Includes telephones. (*c*) 1909. (*d*) 1910 (*e*) 1907.

VIII. THE WORLD'S HOP CROP, 1910.

(Excluding Canada, for which the census of 1901 shows a production during the preceding year of 1,004,216 pounds.)

Country.	1910.
North America:	
United States:	*Pounds.*
New York	9,000,000
California	13,000,000
Oregon	18,000,000
Washington	4,000,000
Total	44,000,000
Europe:	
Austria-Hungary:	
Austria	35,310,000
Hungary	2,860,000
Total Austria-Hungary	38,170,000
Belgium	6,000,000
France	6,653,000
Germany	44,998,000
Great Britain	33,900,000
Netherlands	158,000
Russia	6,430,000
Total	136,309,000
Australasia:	
Australia:	
Victoria	123,000
Tasmania	1,336,000
New Zealand	749,000
Total	2,208,000
Grand Total	182,517,000

IX. INTERNATIONAL TRADE IN HOPS

1908 and 1909

Country.	1908.	1909.
Exports.	*Pounds.*	*Pounds.*
Austria-Hungary	15,498,272	17,834,112
Belgium	1,403,039	2,508,319
France	152,339	163,802
Germany	27,341,943	19,408,417
Great Britain	1,059,632	1,750,896
Netherlands	1,771,156	1,442,399
New Zealand	170,016	347,984
Russia	241,342	2,600,122
United States	21,423,869	8,955,533
Other Countries	98,000	226,000
Total	69,159,608	55,237,584
Imports.		
Australia	973,814	847,791
Austria-Hungary	553,360	585,321
Belgium	6,025,351	6,630,010
British India	363,888	300,944
British South Africa	543,984	435,344
Canada	1,205,845	1,248,186
Denmark	1,340,961	1,102,520
France	4,907,929	5,725,567
Germany	6,154,864	8,016,587
Great Britain	29,922,256	15,030,512
Netherlands	3,386,709	2,946,876
Russia	1,283,377	1,047,271
Sweden	1,166,003	974,140
Switzerland	1,289,704	874,785
United States	7,367,684	6,807,689
Other Countries	3,809,000	3,629,000
Total	70,294,729	56,202,543

WHEAT PRODUCTION AND TRADE

X. THE WORLD'S WHEAT CROP

Country.	Production in bushels.	
	1909.	1910.
North America:		
United States	737,189,000	695,443,000
Canada:		
N. Brunswick	395,000	371,000
Ontario	16,262,000	17,805,000
Manitoba	52,706,000	41,159,000
Saskatchewan	85,197,000	81,139,000
Alberta	9,579,000	6,593,000
Other	2,605,000	2,923,000
Total	166,744,000	149,990,000
Mexico	10,000,000	10,000,000
Total	913,933,000	855,433,000
South America:		
Argentina	156,162,000	131,010,000
Chile	17,743,000	19,743,000
Uruguay	8,595,000	9,000,000
Total	182,500,000	159,753,000
Europe:		
Austria-Hungary	186,076,000	255,162,000
Belgium	15,506,000	14,000,000
Bulgaria	32,071,000	49,126,000
Denmark	3,829,000	4,737,000
Finland	135,000	135,000
France	356,193,000	268,364,000
Germany	138,000,000	141,884,000
Great Britain	65,188,000	60,017,000
Greece	7,000,000	7,000,000
Italy	189,959,000	153,337,000
Montenegro	200,000	200,000
Netherlands	4,158,000	4,324,000
Norway	313,000	294,000
Portugal	5,000,000	6,000,000
Roumania	56,751,000	110,761,000
Russia (Europe)	711,478,000	699,413,000
Servia	13,962,000	10,000,000
Spain	144,105,000	137,448,000
Sweden	6,978,000	7,450,000
Switzerland	3,568,000	3,417,000
Turkey (Europe)	20,000,000	19,462,000
Total	1,960,470,000	1,952,531,000
Asia:		
British India	284,361,000	357,941,000
Cyprus	2,600,000	2,600,000
Jap. Empire	23,210,000	20,329,000
Persia	16,000,000	16,000,000
Russia (Asiatic)	71,792,000	76,282,000
Turkey (Asiatic)	35,000,000	35,000,000
Total	432,963,000	508,152,000
Africa	69,199,000	72,886,000
Australia	73,712,000	102,197,000
Grand Total	3,632,777,000	3,650,952,000

XI. INTERNATIONAL TRADE IN WHEAT

Country.	1908.	1909.
Exports.	*Bushels.*	*Bushels.*
Argentina	133,610,896	92,377,517
Australia	15,027,388	31,549,498
Austria-Hungary	14,720	10,872
Belgium	24,178,475	22,844,944
British India	4,289,344	39,128,090
Bulgaria	7,818,338	5,912,621
Canada	52,502,903	49,428,195
Chile	4,946,857	4,015,364
Germany	9,594,177	7,708,178
Netherlands	29,914,096	47,469,644
Roumania	26,247,406	31,514,810
Russia	54,050,456	189,128,151
Servia	3,319,526	5,296,155
United States	92,779,509	48,489,674
Other Countries	6,043,000	9,310,000
Total	464,337,091	584,183,713
Imports.		
Austria-Hungary	290,334	26,976,334
Belgium	67,032,575	70,921,646
Brazil	9,551,436	9,551,436
Denmark	3,593,773	3,496,826
France	2,752,415	5,248,539
Germany	76,814,333	89,400,124
Great Britain	168,629,046	182,219,770
Greece	6,638,757	6,490,139
Italy	29,026,788	48,955,825
Japan	1,319,524	778,524
Netherlands	40,159,483	59,724,417
Portugal	4,604,041	3,898,434
Spain	2,902,239	3,529,873
Sweden	7,599,881	7,070,799
Switzerland	12,140,012	14,699,277
Other Countries	13,189,000	7,309,000
Total	446,243,637	540,270,963

Beerbohm estimates the wheat production of the world for 1911 at 411,000,000 quarters, equal to 3,523,000,000 bushels. The United States crop is given in the final estimates of the Department of Agriculture at 621,338,000 bushels.

SUGAR PRODUCTION AND TRADE

XII. WORLD'S SUGAR PRODUCTION

Country.	1909–10.	1910–11.
Cane Sugar.		
North America:	*Tons.*	*Tons.*
United States:		
Louisana	325,000	300,000
Texas	10,000	11,000
Hawaii	462,613	485,000
Porto Rico	308,000	320,000
Total U.S. (except Philippine Is.)	1,105,613	1,116,000
Central America	21,000	21,000
Mexico	160,000	170,000
West Indies:		
British	112,000	117,000
Cuba	1,804,349	1,900,000
Others	199,000	206,000
Total	3,401,962	3,530,000
South America	645,843	706,000
Europe:		
Spain	23,033	24,000
Asia:		
Philippine Islands	120,000	150,000
Other	3,485,597	3,505,000
Total	3,605,918	3,655,000
Africa	391,597	351,000
Oceania	218,234	256,000
Grand Total, Cane Sugar	8,286,587	8,522,000
Beet Sugar.		
North America:	*Tons.*	*Tons.*
United States	457,562	510,000
Canada	8,802	8,704
Total	466,364	518,704
Europe:		
Austria-Hungary	1,257,000	1,600,000
Belgium	250,000	285,000
France	801,000	750,000
Germany	2,027,000	2,572,000
Netherlands	198,000	225,000
Russia	1,145,000	2,075,000
Other Countries	460,000	550,000
Total	6,138,000	8,057,000
Grand Total, Beet Sugar	6,604,364	8,575,704
Grand Total, Cane and Beet Sugar.	14,890,951	17,097,704

XIII. INTERNATIONAL TRADE IN SUGAR

Country.	1908.	1909.
Exports.	*Pounds.*	*Pounds.*
Argentina	40,622	87,576
Austria-Hungary	1,769,027,274	1,757,062,893
Belgium	293,991,033	321,161,159
Brazil	69,616,218	154,780,081
British Guiana	258,077,120	243,118,400
British India	46,355,008	36,905,904
China	75,818,000	123,619,867
Cuba	1,991,018,068	3,206,646,443
Dutch East Indies	2,823,722,228	2,782,634,830
Egypt	8,638,977	9,987,436
Formosa	137,148,777	277,482,654
France	540,824,641	535,757,483
Germany	1,842,130,114	1,882,598,329
Mauritius	434,420,571	395,403,344
Netherlands	339,798,814	336,095,311
Peru	275,339,651	275,339,651
Philippine Is.	319,082,784	285,116,244
Réunion	104,133,256	104,133,256
Russia	658,262,999	451,890,300
Trinidad and Tobago	88,744,320	101,539,200
Other countries.	985,775,000	1,007,483,000
Total	13,061,965,475	14,288,843,361
Imports.		
Argentina	91,654,477	43,683,538
Australia	43,918,224	223,324,304
British India	1,185,089,696	1,254,130,976
British South Africa	91,486,806	67,321,877
Canada	437,085,696	522,558,227
Chile	106,660,995	153,624,041
China	578,563,200	743,704,800
Denmark	82,653,042	84,324,407
Egypt	117,407,689	108,403,341
Finland	90,169,703	97,576,050
France	254,266,538	238,557,561
Great Britain	3,495,191,616	3,663,325,456
Italy	10,795,373	26,113,267
Japan	443,138,800	298,867,600
Netherlands	141,159,438	156,036,526
New Zealand	102,663,680	116,441,136
Norway	87,074,147	98,677,191
Persia	187,302,229	201,246,499
Portugal	73,321,464	77,187,757
Singapore	91,263,733	125,336,667
Switzerland	201,421,100	201,007,271
Turkey	302,621,963	302,621,963
United States	3,718,700,796	3,816,896,855
Uruguay	3,904,846	3,904,846
Other countries.	595,478,000	618,985,000
Total	12,532,993,251	13,243,857,156

XIV. THE WORLD'S COTTON CROP

(*U. S. Census.*)

(Bales of 500 lb.)

Country.	1908.	1909.	1910.
Brazil	425,000	360,000	360,000
British India	2,953,000	3,773,000	3,508,000
China	600,000	600,000	725,000
Egypt	1,275,000	911,000	1,535,000
Mexico	140,000	125,000	135,000
Peru	57,000	107,000	128,000
Persia	50,000	90,000	92,000
Russia	846,000	720,000	900,000
Turkey	80,000	32,000	105,000
United States	13,002,000	9,863,000	11,483,000
Other Countr.	185,000	195,000	200,000
Total	19,613,000	16,776,000	19,171,000

The United States cotton crop of 1911 is estimated at 14,885,000 bales.

XV. INTERNATIONAL TRADE IN COTTON

(Bales of 500 pounds, gross.)

Exports.	1908.	1909.
	Bales.	*Bales.*
Brazil	16,441	45,974
British India	1,423,692	1,788,739
China	171,132	176,761
Egypt	1,315,968	1,441,631
France	213,791	270,387
Germany	248,768	255,294
Netherlands	108,262	134,994
Persia	83,985	128,031
Peru	143,739	.....
United States	9,152,070	8,149,477
Other Countries	118,000	*148,000
Total	12,995,848	12,539,288
Imports.		
Austria-Hungary	816,444	866,981
Belgium	226,183	308,583
Canada	125,546	156,175
France	1,294,295	1,469,837
Germany	2,189,209	2,235,384
Great Britain	3,702,357	4,017,004
Italy	953,538	880,187
Japan	890,132	1,071,801
Mexico	7,611	59,071
Netherlands	243,184	238,003
Russia	1,100,041	*848,424
Spain	437,752	325,486
Sweden	97,755	79,746
Switzerland	107,309	109,590
United States	154,662	193,940
Other Countries	309,000	*298,000
Total	12,655,018	13,158,212

* Preliminary.

XVI. WORLD'S COTTON SPINDLES AND MILL CONSUMPTION, 1910 AND 1900

	Cotton Spindles.		Mill Consumption. (Bales.)	
	1900.	1910.	1900.	1910.
Brazil	450,000	1,000,000	85,000	370,000
British India	4,945,000	5,657,000	1,162,000	1,653,000
Canada	550,000	855,000	110,000	119,000
Europe:				
Austria-Hungary	3,300,000	4,643,000	675,000	785,000
Belgium	920,000	1,322,000	170,000	180,000
Greece	70,000	99,000	17,000	25,000
Denmark	40,000	83,000	15,000	19,000
France	5,500,000	7,100,000	700,000	951,000
Germany	8,000,000	10,200,000	1,400,000	1,660,000
Great Britain	45,500,000	53,397,000	3,330,000	3,372,000
Italy	1,940,000	4,200,000	475,000	753,000
Netherlands	300,000	426,000	70,000	74,000
Norway	35,000	74,000	10,000	11,000
Portugal	230,000	476,000	60,000	58,000
Russia	7,500,000	8,250,000	1,350,000	1,457,000
Spain	2,615,000	1,853,000	400,000	265,000
Sweden	360,000	377,000	85,000	80,000
Switzerland	1,550,000	1,497,000	125,000	102,000
Other European Countries	60,000	100,000	25,000	50,000
Japan	1,274,000	2,005,000	700,000	1,028,000
China	550,000	765,000	200,000	315,000
Mexico	470,000	733,000	125,000	140,000
United States:				
Cotton-growing States	4,368,000	10,740,000	1,523,000	2,292,000
All Other States	15,104,000	18,449,000	2,350,000	2,507,000
All Other Countries	50,000	225,000	15,000	55,000
*Total	105,681,000	134,526,000	15,177,000	18,321,000

* Total for 1911, 137,423,017 spindles.

TOBACCO PRODUCTION AND TRADE

XVII. THE WORLD'S TOBACCO CROP

Country.	1909.
	Pounds.
North America:	
United States	949,357,000
Porto Rico	10,000,000
Total United States (except Philippines)	959,357,000
Canada:	
Ontario	5,610,000
Quebec	7,656,000
Other	107,000
Total Canada	13,373,000
Cuba	59,323,000
Guatemala	1,300,000
Mexico	34,711,000
Santo Domingo	32,500,000
Total North America	1,100,564,000
South America:	
Argentina	31,000,000
Bolivia	3,000,000
Brazil	65,679,000
Chile	2,984,000
Ecuador	143,000
Paraguay	13,000,000
Peru	1,500,000
Total South America	117,306,000
Europe:	
Austria-Hungary:	
Austria	19,188,000
Hungary	159,000,000
Bosnia-Herzegovina	11,464,000
Total Austria-Hungary	189,652,000
Belgium	18,597,000
Bulgaria	7,819,000
Denmark	160,000
France	50,056,000
Germany	62,122,000
Greece	18,300,000
Italy	10,479,000
Netherlands	1,700,000
Roumania	12,098,000
Russia (including Asiatic)	176,953,000
Servia	1,732,000
Sweden	2,270,000
Turkey (including Asiatic)	100,000,000
Total Europe	651,938,000
Asia:	
British India	452,819,000
Dutch East Indies:	
Java	67,000,000
Sumatra	49,942,000
Japanese Empire	91,845,000
Philippine Islands	40,258,000
Total Asia	701,864,000
Africa:	
Algeria	9,306,000
Cape of Good Hope	5,000,000
Natal	2,527,000
Other	5,394,000
Total Africa	22,227,000

WORLD'S TOBACCO CROP (*Continued*)

Country.	1909.
	Pounds.
Oceania:	
Australia	1,330,000
Fiji	18,000
Total Oceania	1,348,000
Grand Total	2,595,247,000

XVIII. INTERNATIONAL TRADE IN UNMANUFACTURED TOBACCO

Exports.

Country.	1908.	1909.
	Pounds.	*Pounds.*
Algeria	4,073,480	6,222,563
Austria-Hungary	21,044,440	21,456,931
Brazil	32,129,345	65,678,907
British India	19,006,506	17,195,391
Bulgaria	5,532,100	4,347,506
Ceylon	4,075,075	4,075,075
Cuba	40,111,922	49,468,425
Dutch East Indies	175,685,251	131,668,981
Greece	10,781,318	13,159,838
Mexico	3,884,456	2,837,311
Netherlands	3,751,654	4,232,501
Philippine Islands	24,927,663	20,976,743
Russia	17,117,323	20,403,732
Santo Domingo	18,665,594	24,822,461
Turkey	39,267,984	39,267,984
United States	305,455,871	351,564,177
Other countries	38,790,000	36,086,000
Total	764,299,982	813,464,526

Imports.

Country.	1908.	1909.
	Pounds.	*Pounds.*
Argentina	10,500,798	11,756,931
Australia	12,886,746	9,370,516
Austria-Hungary	43,908,354	48,820,867
Belgium	20,927,037	21,194,579
British India	6,618,473	7,514,446
Canada	16,760,080	12,744,798
China	11,234,667	8,273,200
Denmark	19,896,714	3,306,900
Egypt	19,147,819	18,753,130
Finland	9,561,443	9,477,672
France	63,594,945	44,485,742
Germany	170,494,442	172,018,104
Italy	44,893,159	49,666,772
Netherlands	47,965,176	52,343,677
Norway	3,648,473	3,700,179
Portugal	5,160,110	6,990,132
Spain	31,921,214	40,997,520
Sweden	9,165,985	9,135,007
Switzerland	16,721,617	16,542,877
United Kingdom	87,933,057	85,654,211
United States	37,665,211	44,221,940
Other countries	61,800,000	62,602,000
Total	752,405,520	739,571,200

XIX. THE WORLD'S WOOL CLIP

(Latest Official Returns and Estimates, 1909.)

	1909
	Pounds.
North America:	
United States	321,362,750
British Provinces	11,210,000
Mexico	7,000,000
Central America and West Indies	1,000,000
Total North America	340,572,750
South America:	
Argentina	414,464,800
Brazil	1,130,000
Chile	20,754,000
Peru	9,940,000
Falkland Islands	4,324,000
Uruguay	129,961,170
All Other South America Reported	5,000,000
Total South America	585,573,970
Europe:	
Austria-Hungary	41,600,000
France	78,000,000
Germany	25,600,000
Spain	52,000,000
Portugal	10,000,000
Great Britain	141,939,600
Greece	14,000,000
Italy	21,500,000
Russia (Europe)	320,000,000
Turkey and Balkan States	90,500,000
All Other Europe	18,000,000
Total Europe	813,139,600
Asia	218,146,000
Africa	161,639,000
Australasia	833,711,665
GRAND TOTAL	2,952,782,985

XX. INTERNATIONAL TRADE IN WOOL, 1909

EXPORTS.	1908.	1909.
	Pounds.	*Pounds.*
Algeria	16,233,514	30,228,338
Argentina	386,994,937	389,513,137
Australia	598,032,199	663,444,284
Belgium	40,465,085	40,651,742
British India	32,108,670	63,052,315
British So. Africa	122,443,992	150,630,571
Chile	32,430,184	37,908,811
China	33,441,467	50,057,733
France	72,337,175	91,793,812
Great Britain	38,311,090	62,941,681
Netherlands	26,359,444	27,520,247
New Zealand	168,035,607	205,913,501
Peru	8,406,261	8,406,261
Russia	14,409,079	28,799,958
Spain	14,373,068	36,906,860
Turkey	40,156,583	40,156,583
Uruguay	84,129,000	84,129,000
Other Countries	77,213,000	92,302,000
Total	1,805,880,355	2,104,356,834
IMPORTS.		
Austria-Hungary	60,634,821	67,222,884
Belgium	131,118,370	131,380,685
British India	18,470,491	20,252,059
Canada	4,468,680	8,235,570
France	504,910,496	622,749,015
Germany	430,576,566	471,480,165
Great Britain	470,804,920	500,198,977
Japan	9,416,601	13,337,138
Netherlands	31,714,118	28,612,749
Russia	71,353,043	69,336,576
Sweden	12,050,823	11,116,358
Switzerland	11,097,626	11,524,546
United States	142,559,384	312,131,171
Other Countries	48,431,000	55,158,000
Total	1,947,606,939	2,322,735,893

XXI. THE WORLD'S RAW SILK PRODUCTION

(Silk Manufacturers' Assn., Lyons, France.)

COUNTRY.	1908.	1909.
Western Europe:	*Pounds.*	*Pounds.*
Italy	9,890,000	9,372,000
France	1,446,000	1,486,000
Spain	166,000	176,000
Austria-Hungary	736,000	838,000
Total	12,238,000	11,872,000
Levant and Cent. Asia.	5,937,000	6,823,000
Far East:		
China:		
Exports from Shanghai	12,430,000	11,243,000
Exports from Canton	5,242,000	4,817,000
Japan:		
Exports from Yokohama	16,689,000	18,078,000
Exports from Calcutta and Bombay	551,000	518,000
	34,912,000	34,656,000
Grand Total	53,087,000	53,351,000

Imports into the United States, 1910, 23,457,223 pounds.

XXII. CORN, RYE AND BARLEY

CORN—The world's production of corn, as estimated by the Department of Agriculture for 1909, was 3,672,636,000 bushels, of which the United States supplied 2,772,376,000 bushels, of which 38,128,498 bushels were exported; Argentina, 177,155,000 bushels, 89,499,359 bushels exported; Austria-Hungary, 210,684,000 bushels; and all Europe, 535,247,000 bushels.

RYE—The world's production of rye in 1910 was estimated at 1,663,864,000 bushels, of which the United States supplied 33,039,000 bushels; Germany, 413,802,000 bushels; Austria-Hungary, 157,569,000 bushels; European Russia, 843,699,000 bushels; and all Europe 1,605,052,000 bushels.

BARLEY—The world's production of barley in 1910 was estimated at 1,379,452,000 bushels, of which the United States supplied 162,227,000; European Russia, 448,832,000; Germany, 133,330,000; Austria-Hungary, 127,138,000; and Canada, 45,148,000.

XXIII. THE WORLD'S COFFEE CROP

Country.	1908.	1909.
	Pounds.	*Pounds.*
North America:		
United States:		
Porto Rico	28,490,000	45,210,000
Hawaii	1,963,000	2,702,000
Total U. S.	30,453,000	47,912,000
Central America	182,430,000	192,472,000
Mexico	42,000,000	81,000,000
West Indies	74,528,000	53,048,000
Total North America	329,411,000	374,432,000
South America:		
Brazil	1,674,428,000	2,232,911,000
Venezuela	103,454,000	93,987,000
Colombia	79,366,000	79,366,000
Bolivia	1,500,000	1,500,000
Ecuador	8,315,000	7,550,000
Peru	1,102,000	1,102,000
Other	546,000	651,000
Total South America	1,868,711,000	2,417,067,000
Asia:		
Dutch East Indies	50,935,000	61,183,000
Other	52,261,000	45,823,000
Total Asia	103,196,000	107,006,000
Africa:		
Nyasaland Protectorate	1,011,000	774,000
German East Africa	1,878,000	1,878,000
Somali Coast	5,767,000	5,767,000
Liberia	2,000,000	2,000,000
Abyssinia	10,000,000	10,000,000
Other	441,000	403,000
Total Asia	21,097,000	20,822,000
Oceania	926,000	885,000
Grand Total	2,323,341,000	2,920,212,000

XXIV. INTERNATIONAL TRADE IN COFFEE

Country.	1908.	1909.
Exports.	*Pounds.*	*Pounds.*
Brazil	1,674,432,552	2,232,910,944
British India	37,568,832	23,625,504
Colombia	70,000,000	70,000,000
Costa Rica	19,797,312	26,521,567
Dutch East Indies	56,806,209	39,054,808
Guatemala	63,333,526	63,333,526
Haiti	41,000,000	41,000,000
Jamaica	7,885,248	8,253,616
Mexico	52,591,066	54,874,939
Netherlands	179,444,917	193,098,597
Nicaragua	17,900,000	17,900,000
Salvador	57,589,360	63,330,000
Singapore	6,765,200	5,488,267
United States	34,268,012	35,089,526
Venezuela	103,453,539	93,987,140
Other countries	88,849,000	78,533,000
Total	2,511,684,773	3,047,001,434
Imports.		
Argentina	22,085,972	25,548,267
Austria-Hungary	121,780,012	126,991,574
Belgium	134,658,074	126,319,127
British S. Africa	25,321,709	27,727,936
Cuba	24,432,111	25,407,861
Denmark	24,017,703	33,020,499
Egypt	21,146,287	18,994,922
Finland	28,549,443	30,191,968
France	226,559,741	237,975,547
Germany	425,332,652	470,923,724
Italy	50,189,763	53,121,381
Netherlands	262,479,471	288,284,852
Norway	27,186,340	32,291,526
Russia	25,691,765	25,925,379
Singapore	7,405,067	6,632,133
Spain	27,373,358	27,070,627
Sweden	66,899,643	92,267,883
Switzerland	24,436,471	26,515,606
United Kingdom	29,195,788	29,677,088
United States	938,559,889	1,139,826,171
Other countries	98,942,000	97,714,000
Total	2,612,243,259	2,942,428,071

MINERAL PRODUCTION

XXV. THE MINOR METALS

(*The Metallgesellschaft, Frankfort-on-Main*)

	Metric Tons.			
	1907.	1908.	1909.	1910.
Lead	986,000	1,078,100	1,085,600	1,132,900
Zinc	738,400	722,100	783,200	816,600
Tin	97,700	107,500	108,300	110,900
Aluminum	19,800	18,600	24,200	34,000
Nickel	14,100	14,600	17,300	20,100
Quicksilver	3,200	3,300	3,300	3,400

XXVI. COAL PRODUCTION OF THE WORLD

(*U. S. Geological Survey.*)

(In short tons)

	1906.	1907.	1908.	1909.	1910.
Austria-Hungary	50,230,085	53,109,750	54,322,210	54,573,788	.....
Belgium	26,026,119	26,261,745	24,999,392	25,923,395	26,374,986
France	37,823,931	40,708,215	41,471,343	41,856,269	42,516,232
Germany	222,350,526	226,773,605	237,306,973	239,676,934	245,043,120
Great Britain	281,195,743	299,970,677	292,887,144	295,427,229	296,007,699
Russia	23,857,961	28,685,532	27,622,646	.....	24,967,095
United States	414,157,278	480,363,424	415,842,698	460,814,616	501,596,378

The total production of the world is estimated at 1,300,000,000 short tons in 1910.

XXVII. COPPER—WORLD'S PRODUCTION AND CONSUMPTION

(In tons of 2204.6 lb.)

(*The Mineral Industry.*)

Year.	Production.	Consumption.	Price (*a*).
1905	693,900	727,400	15.59
1906	712,900	727,600	19.28
1907	703,000	657,300	20.00
1908	744,600	698,300	13.21
1909	854,100	782,800	12.98
1910	866,640	861,000	12.74

(*a*) Quotational averages, cents per pound at New York.

XXVIII. PIG IRON PRODUCTION OF THE WORLD

(In metric tons)

(*The Mineral Industry.*)

	1906.	1907.	1908.	1909.	1910.
Austria-Hungary	1,403,500	1,405,000	1,650,000	1,958,786	2,010,000
Belgium	1,431,160	1,427,940	1,206,440	1,632,350	1,803,500
Canada	550,618	590,444	572,123	687,923	752,053
France	3,319,032	3,588,949	3,391,150	3,632,105	4,032,459
Germany	12,478,067	13,045,760	11,813,511	12,917,653	14,793,325
Italy	30,450	32,000	112,924	207,800	215,000
Russia	2,350,000	2,768,220	2,748,000	2,871,332	2,740,000
Spain	387,500	385,000	403,500	389,000	367,000
Sweden	552,250	603,100	563,300	443,000	604,300
United Kingdom	10,311,778	10,082,638	9,438,477	9,818,916	10,380,212
United States	25,706,882	26,193,863	16,190,994	26,108,199	27,636,687
All other countries	650,000	556,900	550,000	550,000	525,000
Total	59,171,237	60,679,814	48,640,419	61,217,064	65,859,536

XXIX. STEEL PRODUCTION OF THE WORLD

(In metric tons)

(*The Mineral Industry.*)

	1906.	1907.	1908.	1909.	1910.
Austria-Hungary	1,195,000	1,195,500	2,025,182	1,969,538	2,154,832
Belgium	1,185,660	1,183,500	1,065,500	1,370,000	1,449,500
Canada	515,200	516,300	598,183	766,795	835,487
France	2,371,377	2,667,805	2,727,717	3,034,571	3,506,497
Germany	11,135,085	12,063,632	10,480,349	12,049,834	13,698,638
Italy	109,000	115,000	537,000	661,600	635,000
Russia	1,763,000	2,076,000	2,341,000	2,471,000	2,350,000
Spain	251,600	247,100	239,500	227,000	219,500
Sweden	351,900	443,000	427,100	310,600	468,600
United Kingdom	6,565,670	6,627,112	5,380,372	5,975,734	6,106,856
United States	23,772,506	23,733,391	14,247,619	24,338,302	26,512,437
All Other Countries	420,000	405,000	300,000	325,000	315,000
Total	49,635,998	51,273,340	40,369,522	53,499,974	58,252,347

XXX. THE WORLD'S PRODUCTION OF GOLD AND SILVER—1910

(*Report of the Director of the Mint.*)

	Gold.		Silver.	
	Fine Ounces.	Value.	Fine Ounces.	Value.
United States	4,657,017	$96,269,100	57,137,900	$30,854,500
Canada	493,707	10,205,800	32,869,264	17,749,400
Mexico	1,205,051	24,910,600	71,372,194	38,541,000
Africa	8,474,809	175,189,900	1,037,160	560,100
Australasia	3,167,140	65,470,600	21,545,828	11,634,700
Europe:				
Austria-Hungary	105,101	2,172,600	1,540,808	832,000
France	67,754	1,400,600	629,848	340,100
Russia	1,721,163	35,579,600	140,632	75,900
Other Countries	5,915	122,400	11,840,773	6,394,000
South America:				
Colombia	163,022	3,370,000	866,093	467,700
Peru	24,890	514,500	9,566,118	5,165,700
Venezuela	16,472	340,500	208,043	112,300
Other Countries	334,915	6,923,300	6,776,060	3,659,100
Central America	225,302	4,657,400	2,026,885	1,094,500
Asia:				
British India	518,502	10,718,400	44,772	24,200
Korea	212,808	4,399,100	164,844	89,000
Other Countries	602,729	12,459,500	5,112,140	2,760,500
	21,996,297	$454,703,900	222,879,362	$120,354,700

The world's production of gold in 1911 is estimated at $466,000,000.

XXXI. COINAGE OF GOLD AND SILVER OF THE MINTS OF THE WORLD

(*Report of the Director of the Mint.*)

Year.	Gold.		Silver.	
	Fine Ounces.	Value.	Fine Ounces.	Coining Value.
1880	7,242,951	$149,725,081	65,442,074	$84,611,974
1890	7,219,725	149,244,965	117,789,228	152,293,144
1900	17,170,053	354,936,497	143,362,948	185,358,156
1907	19,921,014	411,803,902	171,434,608	221,652,826
1908	15,819,505	327,018,200	150,582,664	194,692,737
1909	15,163,201	313,451,185	89,040,322	115,122,841
1910	22,004,542	454,874,248	78,786,842	108,915,627

XXXII. ANNUAL CRUDE BIRTH RATES PER 1,000, 1881-1909

[Registrar General's Report, England, 1909.]

Countries. (Arranged in Order of Rates in 1901–05.)	Quinquennial Periods.					Years.				Decrease per cent. between 1881–85 and 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	1909.	
Russia (Eur.)	49.1	48.2	48.2	49.3	.....	.....	.....	.....	.....	.....
Bulgaria	37.2	35.9	37.5	41.0	40.6	44.0	43.6	40.4	.....	+9.1
Roumania	41.8	40.9	41.0	40.2	39.4	40.5	41.7	40.8	41.7	5.7
Jamaica	.....	36.8	38.6	38.9	39.0	38.1	35.0	37.6	37.8	.....
Ceylon	.....	30.3	31.7	37.2	38.8	35.7	32.8	40.1	36.7	.....
Servia	46.3	43.7	43.3	40.1	38.7	41.3	40.0	36.8	36.5	16.4
Hungary	44.6	43.7	41.7	39.4	37.2	36.0	36.0	36.3	37.0	16.6
Chile	39.1	35.5	37.0	35.0	36.1	36.6	38.6	39.3	38.8	7.7
Austria	38.2	37.8	37.4	37.3	35.6	34.9	33.8	33.5	.....	6.8
Spain	36.4	36.0	35.3	34.3	35.0	33.4	32.9	33.2	32.6	3.8
Prussia	37.4	37.3	37.0	36.5	34.8	33.7	33.0	32.8	31.8	7.0
German Emp.	37.0	36.5	36.3	36.0	34.3	33.1	32.3	32.1	.....	7.3
Italy	38.0	37.5	36.0	34.0	32.6	31.9	31.5	33.4	32.4	14.2
Japan	.....	28.5	28.6	31.1	31.7	28.9	33.0	33.9	.....	.....
Netherlands	34.8	33.6	32.9	32.1	31.5	30.4	30.0	29.7	29.1	9.5
Finland	35.5	34.5	31.8	32.6	31.3	31.4	31.3	.....	31.3	11.8
W. Australia	34.5	36.9	30.7	28.3	30.3	30.0	29.2	28.9	27.7	12.2
Denmark	32.4	31.4	30.4	30.0	29.0	28.5	28.3	28.3	28.0	10.5
Tasmania	35.0	34.1	32.7	28.2	29.0	29.5	29.6	30.8	29.9	17.1
Scotland	33.3	31.4	30.5	30.0	28.9	27.9	27.0	27.2	26.4	13.2
Norway	31.2	30.8	30.2	30.1	28.6	26.7	26.3	26.2	26.1	8.3
England and Wales	33.5	31.4	30.5	29.3	28.1	27.1	26.3	26.5	25.6	16.1
Switzerland	28.6	27.5	27.7	28.5	28.1	27.4	26.8	27.1	.....	1.7
Belgium	30.7	29.3	28.9	28.9	27.7	25.7	25.3	24.9	.....	9.8
New South Wales	37.7	36.4	32.9	28.0	26.7	27.0	27.1	26.8	26.9	29.2
Queensland	36.5	37.4	34.1	29.1	26.7	26.3	26.9	26.7	27.2	26.8
New Zealand	36.3	31.2	27.7	25.7	26.6	27.1	27.3	27.4	27.3	26.7
Sweden	29.4	28.8	27.4	26.9	26.1	25.7	25.5	25.7	25.6	11.2
Victoria	30.8	32.7	30.9	26.2	25.0	25.1	25.2	24.6	24.6	18.8
So. Australia	38.5	34.7	32.0	27.0	24.5	23.7	23.9	24.7	24.7	36.4
Ireland	23.9	22.8	23.0	23.3	23.2	23.6	23.2	23.3	23.5	2.9
Ontario, Province of	22.4	22.0	19.9	20.1	21.8	23.3	.....	24.9	.....	2.7
France	24.7	23.1	22.3	21.9	21.2	20.6	19.7	20.2	19.6	14.2

XXXIII. LEGITIMATE BIRTH RATES

[Registrar General's Report, England, 1908.]

Countries (Arranged in Order of Rates in 1900–02).	Proportion of Legitimate Births per 1,000 Wives Aged 15–44 Years. Approximate Periods.			Increase(+) or Decrease (—) per cent. in Fertility During 20 Years.
	1880–82.	1890–92.	1900–02.	
European Countries.				
Holland	347.5	338.8	314.6	— 9.5
Norway	314.5	306.8	302.8	— 3.7
Prussia	312.6	307.6	290.4	— 7.1
Ireland	282.9	287.6	289.4	+ 2.3
German Empire	310.2	300.9	284.2	— 8.4
Austria	281.4	292.4	283.7	+ 0.8
Scotland	311.5	296.4	271.8	—12.7
Italy	276.2	?	269.4	— 2.5
Sweden	293.0	280.0	269.0	— 8.2
Switzerland	284.1	274.0	265.9	— 6.4
Denmark	287.1	278.1	259.1	— 9.8
Spain	257.7	263.9	258.7	+ 0.4
Belgium	312.7	285.1	250.7	—19.8
England and Wales	286.0	263.8	235.5	—17.7
France	196.2	173.5	157.5	—19.7

XXXIV. ANNUAL CRUDE DEATH RATES PER 1,000, 1881–1909

[Registrar General's Report, England, 1909.]

Countries (Arranged in Order of Rates in 1901–05).	Quinquennial Periods.					Years.				Dec. % 1881–85 to 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	1909.	
Russia (Eur.)	35.4	33.2	35.8	31.9	.....	.....	.....	.....	.....	.....
Chile	27.8	35.2	32.6	28.8	30.0	32.9	29.6	31.6	31.5	+7.9
Ceylon	.....	25.1	28.3	27.0	26.7	34.3	30.1	29.4	30.3	.....
Hungary	33.1	32.1	31.8	27.9	26.2	24.8	25.2	24.8	25.1	20.8
Spain	32.6	30.9	30.1	28.8	25.8	25.6	24.0	23.3	23.4	20.9
Austria	30.1	28.9	27.9	25.6	24.2	22.4	22.6	22.3	.....	19.6
Bulgaria	17.7	18.9	27.8	23.9	22.5	22.3	22.3	24.3	.....	+27.1
Servia	24.5	25.9	28.9	24.8	22.4	24.0	22.8	23.7	29.3	8.6
Italy	27.3	27.2	25.5	22.9	21.9	20.8	20.7	*22.6	21.4	19.8
Japan	.....	20.6	21.1	20.7	20.9	19.8	20.9	21.0	.....	.....
German Emp.	25.3	24.4	23.3	21.2	19.9	18.2	18.0	18.1	.....	21.3
France	22.2	22.0	22.3	20.7	19.6	19.9	20.2	19.0	19.3	11.7
Prussia	25.4	24.0	22.8	21.0	19.6	17.9	17.8	17.9	17.0	22.8
Switzerland	21.3	20.4	19.8	18.1	17.7	17.0	16.8	16.2	.....	16.9
Belgium	20.6	20.2	20.1	18.1	17.0	16.4	15.7	16.5	.....	17.5
Scotland	19.6	18.8	19.0	18.0	16.9	16.0	16.2	16.1	15.3	13.8
Eng. and Wales	19.4	18.9	18.7	17.7	16.0	15.4	15.0	14.7	14.5	17.5
Holland	21.4	20.5	19.6	17.2	16.0	14.8	14.6	15.3	13.7	25.2
Sweden	17.5	16.4	16.6	16.1	15.5	14.4	14.6	14.9	13.7	11.4
Denmark	18.4	18.7	18.6	16.4	14.8	13.5	14.2	14.5	13.1	19.6
Norway	17.2	17.0	16.8	15.6	14.5	13.6	14.2	14.3	13.5	15.7
Ont., Prov. of.	11.4	11.0	10.6	11.6	13.0	14.8	.....	13.9	.....	+14.0
Victoria	14.7	16.1	14.0	13.7	12.7	12.4	11.7	12.5	11.2	13.6
N. South Wales	15.7	13.8	12.8	11.9	11.2	9.9	10.6	10.1	9.6	28.7
So. Australia	14.7	12.6	12.3	12.0	10.8	10.3	9.7	9.7	9.3	26.5
Tasmania	16.0	14.9	13.3	12.4	10.8	11.2	11.2	11.7	10.0	32.5
New Zealand	10.9	9.9	10.1	9.6	9.9	9.3	10.9	9.5	9.2	9.2

* Average for four years.

XXXV. ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING—Cities

[From Registrar General's Annual Summary, England, 1910.]

Cities.	1881–1885.	1886–1890.	1891–1895.	1896–1900.	1901–1905.	1906–1910.	1909.	1910.	Dec. % 1881–5 to 1906–10.
London	20.9	19.7	19.8	18.5	16.1	14.0	14.0	12.7	33.0
Edinburgh	19.6	19.7	19.7	19.0	17.3	15.3	15.3	14.0	21.9
Glasgow	26.0	23.1	22.8	21.2	19.5	17.3	17.5	15.1	33.5
Dublin (Reg. Area)	27.5	26.6	25.7	25.6	23.3	21.6	20.9	19.9	21.5
Belfast	24.7	24.4	25.1	23.4	20.8	19.6	18.2	18.6	20.6
Melbourne	20.1	21.0	16.7	15.5	14.0	13.1	12.5	12.7	34.8
Sydney	20.8	17.9	14.3	12.1	11.5	10.5	10.3	10.4	49.5
Montreal	31.0	26.7	25.3	23.1	23.3	?	22.0	?	?
Toronto	20.7	20.1	15.2	14.6	16.3	?	22.3	?	?
Paris	24.4	23.0	21.2	19.2	18.0	17.5	17.4	16.7	28.3
Brussels	23.4	21.2	20.2	17.2	15.2	14.1	13.9	13.6	39.7
Amsterdam	25.1	22.4	19.2	16.7	14.7	13.1	13.1	12.2	47.8
Rotterdam	24.2	22.0	20.8	18.0	15.6	13.4	12.6	12.2	44.6
The Hague	23.3	20.8	18.7	16.2	14.4	13.2	12.7	12.5	43.3
Copenhagen	22.3	22.3	20.2	17.6	16.1	15.1	14.5	14.2	32.3
Stockholm	24.3	21.2	20.0	18.2	16.1	14.5	14.3	14.6	40.3
Christiania	19.9	22.3	19.0	17.5	15.3	13.0	12.7	11.9	34.7
St. Petersburg	32.8	26.8	25.3	24.6	23.5	25.5	24.6	24.1	22.3
Moscow	33.3	33.6	29.2	28.7	26.6	27.6	29.6	26.9	17.1
Berlin	26.5	22.4	20.5	18.1	17.0	15.5	15.1	14.7	41.5
Hamburg	25.2	25.3	24.2	17.3	16.3	14.8	14.6	14.2	41.3
Dresden	25.0	22.1	20.6	19.0	17.6	14.7	14.0	13.8	41.2
Breslau	31.3	28.8	27.4	25.0	23.7	21.2	20.3	19.1	32.3
Munich	30.4	28.3	25.8	23.9	21.0	17.4	17.6	15.9	42.8
Vienna	28.2	25.1	24.1	21.1	19.1	17.0	16.8	15.8	39.7
Prague	32.7	29.6	27.1	24.3	22.6	19.3	19.1	18.4	41.0
Budapest	31.5	30.8	25.5	21.6	19.8	19.5	19.2	19.3	38.1
Trieste	31.1	30.4	29.8	27.5	26.3	24.5	24.6	22.9	21.2
Milan	30.3	30.4	27.4	23.2	22.1	19.3	20.3	17.1	36.3
Turin	27.2	23.5	21.6	19.8	19.6	17.5	15.4	14.9	35.7
Venice	28.3*	28.0	25.1	22.8	22.2	?	22.1	19.0	?
Bucharest	?	?	?	24.6	23.3	24.7	26.4	25.6	?
New York	27.5	25.8	24.6	20.3	18.9	17.0	16.2	16.0	38.2
Chicago	21.5	19.5	20.6	15.2	14.2	14.5	14.1	15.1	.....
Philadelphia	22.3	20.6	21.1	19.2	18.1	?	15.9	16.8	?
Boston	24.9	23.5	23.6	20.9	18.8	?	17.7	.....	?
Rio de Janeiro	30.5	33.1	38.2	29.2	27.9	23.1	19.5	20.6	24.3

* Average for 4 years.

XXXVI. NATURAL INCREASE OF POPULATION—MEAN ANNUAL RATES OF INCREASE BY EXCESS OF BIRTHS OVER DEATHS, PER 1,000 LIVING, 1881–1909

[*Registrar General's Report, England, 1909.*]

Countries (Arranged in Order of Rates in 1901–05).	Quinquennial Periods.					Years.				Decrease per cent. Between 1881–85 and 1901–05.
	1881–85.	1886–90.	1891–95.	1896–1900.	1901–05.	1906.	1907.	1908.	1909.	
Tasmania	19.0	19.2	19.4	15.8	18.2	18.3	18.4	19.1	19.9	4.2
Bulgaria	19.5	17.0	9.7	17.1	18.1	21.7	21.3	16.1	....	7.2
Western Australia	17.4	20.9	14.4	13.2	17.9	18.2	18.1	18.2	17.8	+2.9
Russia (European)	13.7	15.0	12.4	17.4	.....	.....	.....	.....	.....	.....
New Zealand	25.4	21.3	17.6	16.1	16.7	17.8	16.4	17.9	18.1	34.3
Servia	21.8	17.8	14.4	15.3	16.3	17.3	17.2	13.1	7.2	25.2
New South Wales	22.0	22.6	20.1	16.1	15.5	17.1	16.5	16.7	17.3	29.5
Holland	13.4	13.1	13.3	14.9	15.5	15.6	15.4	14.4	15.4	+15.7
Queensland	17.3	22.5	21.7	17.1	15.3	16.7	16.5	16.5	17.5	11.6
Prussia	12.0	13.3	14.2	15.5	15.2	15.8	15.2	14.9	14.8	+26.7
German Empire	11.7	12.1	13.0	14.8	14.4	14.9	14.3	14.0	.....	+23.1
Denmark	14.0	12.7	11.8	13.6	14.2	15.0	14.1	13.8	14.9	+ 1.4
Norway	14.0	13.8	13.4	14.5	14.1	13.1	12.1	11.9	12.6	+ 0.7
Roumania	15.6	12.2	10.0	12.8	13.9	16.2	15.0	13.1	13.9	10.9
South Australia	23.8	22.1	19.7	15.0	13.7	13.4	14.2	15.0	15.4	42.4
Finland	13.3	14.5	11.3	13.6	12.7	13.9	13.4	.....	14.6	4.5
Victoria	16.1	16.6	16.9	12.5	12.3	12.7	13.5	12.1	13.4	23.6
England and Wales	14.1	12.5	11.8	11.6	12.1	11.7	11.3	11.8	11.1	14.2
Scotland	13.7	12.6	11.5	12.0	12.0	11.9	10.8	11.1	11.1	12.4
Austria	8.1	8.9	9.5	11.7	11.4	12.5	11.2	11.2	.....	+40.7
Hungary	11.5	11.6	9.9	11.5	11.0	11.2	10.8	11.5	11.9	4.3
Japan	.....	7.9	7.5	10.4	10.8	9.1	12.1	12.9	.....	.....
Belgium	10.1	9.1	8.8	10.8	10.7	9.3	9.6	8.4	.....	+ 5.9
Italy	10.7	10.3	10.5	11.1	10.7	11.1	10.8	10.8	11.0	.....
Sweden	11.9	12.4	10.8	10.8	10.6	11.3	10.9	10.8	11.9	10.9
Switzerland	7.3	7.1	7.9	10.4	10.4	10.4	10.0	10.9	.....	+42.5
Spain	3.8	5.1	5.2	5.5	9.2	7.8	8.9	9.9	9.2	+142.1
Ontario, Province of	11.0	11.0	9.3	8.5	8.8	8.5	.....	11.0	.....	20.0
Chile	11.3	0.3	4.4	6.2	6.1	3.7	9.0	7.7	7.3	46.0
Ireland	5.9	4.9	4.5	5.2	5.6	6.6	5.5	5.7	6.3	5.1
France	2.5	1.1	.....	1.2	1.6	0.7	0.5	1.2	0.3	36.0

XXXVII. THE WORLD'S MERCHANT MARINE

[*Compiled from Lloyd's Register.*]

Steam Tonnage (100 Tons Gross and Upwards) and Number of Vessels of the Principal Maritime Countries

Flag.	1900.		1910.		1911.	
	No.	Gross Tons.	No.	Gross Tons.	No.	Gross Tons.
American:						
Sea	690	878,564	1,073	1,641,919	1,115	1,715,427
Lakes	242	576,402	563	2,146,769	579	2,201,866
Austro-Hungarian	214	387,471	365	777,729	377	844,981
British	7,930	12,149,090	9,837	18,059,037	9,901	18,643,649
Danish	369	412,273	553	671,828	551	692,718
Dutch	289	467,209	532	983,049	559	1,029,596
French	662	1,052,193	875	1,448,172	890	1,542,568
German	1,209	2,159,919	1,822	3,959,318	1,856	4,092,015
Italian	312	540,349	450	987,559	479	1,026,823
Japanese	484	488,187	846	1,146,977	861	1,200,975
Norwegian	806	764,683	1,312	1,422,006	1,373	1,537,873
Spanish	422	642,231	511	746,748	526	758,097
Swedish	678	418,550	964	782,508	975	808,898
Other Countries	1,591	1,432,237	2,305	2,516,076	2,431	2,686,086
Total	15,898	22,369,358	22,008	37,289,695	22,473	38,781,572

II. NATIONAL STATISTICS

I. POPULATION CLASSIFIED BY SEX, BY RACE, AND BY NATIVITY, 1890–1910

[Thirteenth Census.]

Sex, Race, or Nativity.	Population.			Per cent. of population.		Per cent. of increase.	
	1910.	1900.	1890.	1910.	1900.	1900 to 1910.	1890 to 1900.
Total	91,972,266	75,994,575	62,947,714	.....	100.0	.....	20.7
Male	47,332,122	38,816,448	32,237,101	.....	51.1	.....	20.4
Female	44,640,144	37,178,127	30,710,613	.....	48.9	.....	21.1
White	81,732,687	66,809,196	55,101,258	88.9	87.9	22.3	21.2
Negro	9,828,294	8,833,994	7,488,676	10.7	11.6	11.3	18.0
Indian	.....	237,196	248,253	.....	0.3	.....	4.5
Mongolian	.....	114,189	109,527	.....	0.2	.....	4.3
Chinese	.....	89,863	107,488	.....	0.1	.....	16.4
Japanese	.....	24,326	2,039	.....	.....	.....	1,093.0
Native	.....	65,653,299	53,698,154	.....	86.4	.....	22.3
Foreign born	.....	10,341,276	9,249,560	.....	13.6	.....	11.8

II. POPULATION CLASSIFIED BY RACE AND NATIVITY OF PARENTS, 1890–1910

[Thirteenth Census.]

Race or Nativity.	Year.	Total.	Population having parents			Per cent having parents		
			Both Native.	Both Foreign Born.	One Native and One Foreign Born.	Both Native.	Both Foreign Born.	One Native and One Foreign Born.
Total	1910	91,972,266	.....	.....	.....	.....	.....	.....
	1900	75,994,575	49,965,636	20,919,887	5,109,052	65.8	27.5	6.7
	1890	62,947,714	42,271,655	.....	.....	67.2	.....	.....
White	1910	81,732,687	.....	.....	.....	.....	.....	.....
	1900	66,809,196	40,958,216	20,775,887	5,075,093	61.3	31.1	7.6
	1890	55,101,258	34,581,615	17,011,781	3,507,862	62.7	30.9	6.4
Native	1910	68,389,104	.....	.....	.....	.....	.....	.....
	1900	56,595,379	40,949,362	10,632,280	5,013,737	72.3	18.8	8.9
	1890	45,979,391	34,475,716	8,085,019	3,418,656	75.0	17.6	7.4
Foreign born	1910	13,343,583	.....	.....	.....	.....	.....	.....
	1900	10,213,817	8,854	10,143,607	61,356	0.1	99.3	0.6
	1890	9,121,867	105,899	8,926,762	89,206	1.1	97.9	1.0
Negro, Indian, and Mongolian	1910	10,239,579	.....	.....	.....	.....	.....	.....
	1900	9,185,379	9,007,420	144,000	33,959	98.0	1.6	0.4
	1890	7,846,456	7,690,040	.....	.....	98.0	.....	.....

Note: A table on page 18 of The American Year Book for 1910 gave the returns of the Twelfth Census for the distribution of the population among various classes of gainful occupations. Similar figures for the Thirteenth Census are not yet available, even in incomplete form. The preliminary returns of the Thirteenth Census published up to the end of 1911 are given in the tables on this and the following pages.

III. FOREIGN BORN POPULATION BY COUNTRIES OF BIRTH—1860 TO 1910

[Thirteenth Census.]

Country of Birth.	1910.	1900.	1890.	1880.	1870.	1860.
Total	13,342,500	10,341,276	9,249,547	6,679,943	5,567,229	4,138,697
Austria	1,190,200	275,907	123,271	38,663	30,508	25,061
Bohemia		156,891	118,106	85,361	40,289	
Canada (English)	(a) 1,198,000	784,741	678,442	717,157	493,464	249,970
Canada (French)		395,066	302,496			
China		81,534	106,688	104,468	63,042	35,565
Denmark	181,500	153,805	132,543	64,196	30,107	9,962
England	875,400	840,513	909,092	664,160	555,046	433,494
France	117,100	104,197	113,174	106,971	116,402	109,870
Germany	2,499,200	2,663,418	2,784,894	1,966,742	1,690,533	1,276,075
Holland	120,000	104,931	81,828	58,090	46,802	28,281
Hungary	468,500	145,714	62,435	11,526	3,737	
Ireland	1,351,400	1,615,459	1,871,509	1,854,571	1,855,827	1,611,304
Italy	1,341,800	484,027	182,580	44,230	17,157	10,518
Mexico	218,800	103,393	77,853	68,399	42,435	27,466
Norway	403,500	336,388	322,665	181,729	114,246	43,995
Poland		383,407	147,440	48,557	14,436	7,298
Russia	1,577,300	423,726	182,644	35,722	4,644	3,160
Scotland	263,400	233,524	242,231	170,136	140,835	108,518
Sweden	665,500	572,014	478,041	194,337	97,332	18,625
Switzerland	124,800	115,593	104,069	88,621	75,153	53,327
Wales	82,600	93,586	100,079	83,302	74,533	45,763
Other Countries		273,442	127,467	93,005	60,701	40,445

(a) Including Newfoundland.

IV. INDIAN POPULATION AND RESERVATIONS

(June 30, 1911.)

	Population.	Reservations.		
		No.	Allotted Sq. Miles.	Unallotted Sq. Miles.
Alabama	909			
Arizona	39,216	12	579.01	30,137.77
California	16,371	33	113.88	569.91
Colorado	841	1	113.52	756.11
Florida	446			36.78
Idaho	3,791	3	451.86	752.37
Indiana	279			
Iowa	369	1		5.08
Kansas	1,309	5	425.07	2.13
Maine	892			
Michigan	7,519	3	239.04	1.44
Minnesota	10,711	10	1,403.09	910.42
Mississippi	1,253			
Montana	10,814	6	1,105.58	8,680.60
Nebraska	3,809	5	530.05	8.03
Nevada	5,240	5	15.60	1,076.20
New Mexico	21,121	22	552.83	2,916.94
New York	6,046	8		137
North Carolina	7,851	1		98.77
North Dakota	8,253	4	2,454.04	1,899.34
Oklahoma	117,247	26	30,538.63	4,987.11
Oregon	6,403	5	792.21	1,894.60
South Carolina	331			
South Dakota	20,352	7	7,843.62	3,438.55
Texas	702			
Utah	3,123	2	174.85	279.99
Washington	10,997	20	908.26	3,699.09
Wisconsin	11,428	7	446.54	475.48
Wyoming	1,692	1	348.81	148.92
Other States	4,468			
Total	323,783	187	49,036.49	62,912.64

V. NUMBER AND ACREAGE OF FARMS, IMPROVED AND UNIMPROVED, 1850–1910

[*Thirteenth Census.*]

Year.	Number of Farms.	Number of acres in farms.		
		Total.	Improved.	Unimproved.
1910	6,340,357	873,729,000	477,448,000	396,281,000
1900	5,737,372	838,591,774	414,498,487	424,093,287
1890	4,564,641	623,218,619	357,616,755	265,601,864
1880	4,008,907	536,081,835	284,771,042	251,310,793
1870	2,659,985	407,735,041	188,921,099	218,813,942
1860	2,044,077	407,212,538	163,110,720	244,101,818
1850	1,449,073	293,560,614	113,032,614	180,528,000

Note.—The figures for 1910, while subject to revision, will not be materially modified by the additions still to be made.

VI. VALUE OF FARM PROPERTY, 1850–1910

[*Thirteenth Census.*]

Year.	Value of—			
	All Farm Property.	Farm Land, with Improvements, Including Buildings.	Implements and Machinery.	Live Stock.
1910	$40,674,712,000	$34,681,507,000	$1,262,022,000	$4,731,182,929
1900	20,439,901,164	16,614,647,491	749,775,970	3,075,477,703
1890	16,082,267,689	13,279,252,649	494,247,467	2,308,767,573
1880	12,180,501,538	10,197,096,776	406,520,055	1,576,884,707
1870	11,124,958,747	9,262,803,861	336,878,429	1,525,276,457
1860	7,980,493,063	6,645,045,007	246,118,141	1,089,329,915
1850	3,967,343,580	3,271,575,426	151,587,638	544,180,516

Note.—The figures for 1910 are subject to slight modification.

VII. ACREAGE OF FARM CROPS, 1910, 1900, and 1890

[*Thirteenth Census.*]

Crop.	Unit of Measure.	Production, 1910.*	Number of acres.		
			1910.	1900.	1890.
Corn	Bushel.	2,552,190,000	98,383,000	94,913,673	72,087,752
Wheat	"	683,350,000	44,261,000	52,588,574	33,579,514
Oats	"	1,007,129,000	35,159,000	29,539,698	28,320,677
Barley	"	173,321,000	7,698,000	4,470,196	3,220,834
Rye	"	29,520,000	2,196,000	2,054,292	2,171,604
Buckwheat	"	14,849,000	878,000	807,060	837,164
Rice	"	24,510,000	722,800	342,214	161,312
Flaxseed	"	19,513,000	2,083,000	2,110,517	1,318,698
Hay and Forage	Ton.	.....	.....	61,691,069	52,948,797
Cotton	Bale.	.....	.....	24,275,101	20,175,270
Tobacco	Pound.	1,055,765,000	1,294,900	1,101,460	695,301
Hemp	"	.....	.....	16,042	25,054
Beans	Bushel.	.....	.....	453,841	.....
Pease	"	.....	.....	968,370	.....
Potatoes	"	389,195,000	3,669,000	2,938,778	2,600,750
Sweet Potatoes	"	.....	.....	537,312	524,588

* The returns of the Thirteenth Census relate to the crop year 1909. Complete and final figures are not yet available.

VIII. WHEAT—1870–1911

(Estimates of Department of Agriculture.)

Year.	Acreage Harvested.	Production.	Average Farm Price per Bushel, Dec. 1st.	Farm Value, Dec. 1st.	Domestic Exports, Including Flour.	Per Cent. Exported.
	Acres.	*Bushels.*	*Cents.*	*Dollars.*	*Bushels.*	*Per cent.*
1870.....	18,993,000	235,885,000	94.4	222,767,000	52,574,111	22.3
1880.....	37,987,000	498,550,000	95.1	474,202,000	186,321,514	37.4
1890.....	36,087,000	399,262,000	83.8	334,774,000	106,181,316	26.6
1900.....	42,495,000	522,230,000	61.9	323,515,000	215,990,073	41.4
1905.....	47,854,000	692,979,000	74.8	518,373,000	97,609,007	14.1
1906.....	47,306,000	735,261,000	66.7	490,333,000	146,700,425	20.0
1907.....	45,211,000	634,087,000	87.4	554,437,000	163,043,669	25.7
1908.....	47,557,000	664,602,000	92.8	616,826,000	114,268,468	17.2
1909.....	46,723,000	737,189,000	99.0	730,046,000	87,364,318	11.9
1910.....	49,205,000	695,443,000	89.4	621,443,000	.....	.....
1911*....	49,543,000	621,338,000	87.4	543,063,000	.....	.....

IX. CORN—1870–1911

Year.	Acreage.	Production.	Farm Price per Bushel, Dec. 1st.	Farm Value, Dec. 1st.	Domestic Exports, Including Meal.	Per Cent. of Crop Exported.
	Acres.	*Bushels.*	*Cents.*	*Dollars.*	*Bushels.*	*Per cent.*
1870.....	38,647,000	1,094,255,000	49.4	540,520,000	10,673,553	1.0
1880.....	62,318,000	1,717,435,000	39.6	679,714,000	93,648,147	5.5
1890.....	71,971,000	1,489,970,000	50.6	754,433,000	32,041,529	2.2
1900.....	83,321,000	2,105,103,000	35.7	751,220,000	181,405,473	8.6
1905.....	94,011,000	2,707,994,000	41.2	1,116,697,000	119,893,833	4.4
1906.....	96,738,000	2,927,416,000	39.9	1,166,626,000	86,368,228	3.0
1907.....	99,931,000	2,592,320,000	51.6	1,336,901,000	55,063,860	2.1
1908.....	101,788,000	2,668,651,000	60.6	1,616,145,000	37,665,040	1.4
1909.....	108,771,000	2,772,376,000	59.6	1,652,822,000	38,128,498	1.4
1910.....	114,002,000	3,125,713,000	48.8	1,523,968,000	.....	.....
1911*....	105,825,000	2,531,488,000	61.8	1,565,258,000	.....	.....

X. RICE—1910–1911

State.	Acreage.	Average Yield per Acre.	Production.	Average Farm Price Dec. 1st.	Farm Value, Dec. 1st.
	Acres.	*Bushels.*	*Bushels.*	*Cents.*	*Dollars.*
Alabama	1,000	25.0	25,000	70	18,000
Arkansas	60,000	40.0	2,400	70	1,680,000
Florida	900	21.0	19,000	72	14,000
Georgia	4,000	22.0	88,000	75	66,000
Louisiana	371,200	34.4	12,769,000	67	8,555,000
Mississippi	2,800	30.0	84,000	70	59,000
North Carolina	1,000	26.5	27,000	75	20,000
South Carolina	17,000	21.0	357,000	75	268,000
Texas	264,800	33.0	8,738,000	68	5,942,000
California	100	33.0	3,000	65	2,000
	722,800	33.9	22,112,400	67.8	16,624,000
1911*	.....	.....	†1,000,000,000	.....	15,400,000

XI. OATS—1870–1911

Year.	Acreage.	Production (Bushels).	Average Farm Price per Bushel.	Farm Value.	Domestic Exports, including Oatmeal.
			Cents.		
1870.....	8,792,000	247,277,000	39.0	96,444,000	147,572
1880.....	16,188,000	417,885,000	36.0	150,244,000	402,904
1890.....	26,431,000	523,624,000	42.4	222,048,000	1,382,836
1900.....	27,365,000	809,126,000	25.8	208,669,000	42,268,931
1906.....	30,959,000	964,905,000	31.7	306,293,000	6,386,334
1907.....	31,837,000	754,443,000	44.3	334,568,000	2,518,855
1908.....	32,344,000	807,156,000	47.2	381,171,000	2,333,817
1909.....	33,204,000	1,007,353,000	40.5	408,174,000	2,548,726
1910.....	35,288,000	1,126,765,000	34.1	384,716,000	.....
1911*.....	37,763,000	922,298,000	45.0	414,663,000	.....

* Final estimates.

XII. RYE

Year.	Acreage.	Production.	Average Farm Price per Bushel.	Farm Value.	Domestic Exports, Including Flour.
		Bushels.	*Cents.*		*Bushels.*
1870	1,176,000	15,474,000	73.2	$11,327,000	87,174
1880	1,768,000	24,541,000	75.6	18,565,000	1,955,155
1890	2,142,000	25,807,000	62.9	16,230,000	358,263
1900	1,591,000	23,996,000	51.2	12,295,000	2,345,512
1906	2,002,000	33,375,000	58.9	19,671,000	769,717
1907	1,926,000	31,566,000	73.1	23,068,000	2,444,588
1908	1,948,000	31,851,000	73.6	23,455,000	1,295,701
1909	2,006,000	32,239,000	73.9	23,809,000	242,262
1910	2,028,000	33,039,000	72.2	23,840,000	.....
1911*	2,097,000	33,119,000	83.2	27,557,090	.....

XIII. BARLEY

Year.	Acreage.	Production.	Average Farm Price per Bushel.	Farm Value.	Domestic Exports.	Imports.
	Acres.	*Bushels.*	*Cents.*		*Bushels.*	
1870	1,109,000	26,295,000	79.1	$20,792,000	340,093	4,866,700
1880	1,843,000	45,165,000	66.6	30,091,000	885,246	9,528,616
1890	3,135,000	67,168,000	62.7	42,141,000	973,062	5,078,733
1900	2,894,000	58,926,000	40.9	24,075,000	6,293,207	171,004
1906	6,324,000	178,916,000	41.5	74,236,000	8,238,842	38,319
1907	6,448,000	153,597,000	66.6	102,290,000	4,349,078	199,741
1908	6,646,000	166,756,000	55.4	92,442,000	6,580,393	2,644
1909	7,011,000	170,284,000	55.2	93,971,000	4,311,566	.....
1910	7,257,000	162,227,000	57.8	93,785,000	.....	.....
1911*	7,627,000	160,240,000	86.9	139,182,000	.....	.....

* Final estimates.

XIV. TOBACCO, 1910

State.	Acreage.	Production.	Farm Value.
Alabama	600	300,000	$60,000
Arkansas	900	585,000	93,600
Connecticut	13,400	23,182,000	3,825,030
Florida	3,500	2,380,000	547,400
Georgia	1,600	1,088,000	217,600
Illinois	1,600	1,264,000	120,080
Indiana	27,000	23,760,000	2,257,200
Kentucky	470,400	381,024,000	33,149,088
Louisiana	500	275,000	68,750
Maryland	28,500	19,665,000	1,514,205
Massachusetts	4,400	7,612,000	1,141,800
Mississippi	100	55,000	11,000
Missouri	7,500	7,875,000	945,000
New Hampshire	100	172,000	25,800
New York	5,900	7,375,000	626,875
North Carolina	216,000	129,600,000	13,737,600
Ohio	92,700	75,087,000	6,382,395
Pennsylvania	33,000	49,500,000	4,603,500
South Carolina	30,000	18,900,000	1,625,400
Tennessee	85,000	64,600,000	5,426,400
Texas	700	420,000	105,000
Vermont	200	320,000	46,400
Virginia	160,000	124,800,000	11,232,000
West Virginia	20,000	12,800,000	1,318,400
Wisconsin	30,200	31,710,000	2,378,250
Total United States	1,233,800	984,349,000	91,458,773

The totals for 1911, as given in the final estimates of the Department of Agriculture, are acreage 1,012,800, production 905,109,000 pounds, and farm value 85,210,000.

XV. COTTON ACREAGE AND PRODUCTION BY STATES, 1900–1909–1910

States.	1900.		1909.		1910.	
	Acres.	Bales.	Acres (000 Omitted).	Bales.	Acres (000 Omitted).	Bales.
United States	25,758,139	10,245,602	30,938	10,386,209	32,403	11,965,962
Alabama	3,403,746	1,038,392	3,471	1,065,377	3,560	1,221,225
Arkansas	1,742,787	812,529	2,218	718,117	2,238	824,228
Florida	235,451	55,896	237	62,936	257	68,437
Georgia	3,783,015	1,272,838	4,674	1,901,830	4,873	1,867,915
Louisiana	1,480,781	720,088	930	269,573	975	256,375
Mississippi	3,194,795	1,061,973	3,291	1,109,580	3,317	1,254,419
Missouri	50,173	27,830	79	52,152	109	75,497
North Carolina	1,091,034	513,677	1,359	649,886	1,478	774,752
Oklahoma	709,006	349,355	1,767	573,786	2,204	995,951
South Carolina	2,195,252	787,231	2,492	1,164,309	2,534	1,240,540
Tennessee	662,612	225,350	735	253,398	765	337,596
Texas	7,178,915	3,368,310	9,660	2,554,520	10,060	3,072,932
Virginia	30,572	12,133	25	10,746	33	16,095

The production in 1911 is estimated at 14,885,000 bales.

XVI. CONSUMPTION OF COTTON AND NUMBER OF ACTIVE COTTON SPINDLES IN THE UNITED STATES, 1900–1910

[*U. S. Census.*]

Year.	Section.	Consumption (bales).	Active spindles. (number).
1910	United States	4,798,953	29,188,945
	Cotton-growing States	2,292,333	10,801,494
	New England States	2,016,386	16,112,496
	All other States	490,234	2,274,955
1909	United States	5,240,719	28,018,305
	Cotton-growing States	2,553,797	10,429,200
	New England States	2,144,448	15,591,851
	All other States	542,474	1,997,254
1900	United States	3,873,165	19,472,232
	Cotton-growing States	1,523,168	4,367,688
	New England States	1,909,498	13,171,377
	All other States	440,499	1,933,167

XVII. PRODUCTION, CONSUMPTION, EXPORTS, AND IMPORTS OF COTTON FOR THE UNITED STATES, 1900–1910

Year.	Production.				Consumption (500-pound bales).	Exports of domestic cotton (500-pound bales).	Net imports (500-pound bales).
	Running bales.	Equivalent 500-pound bales, gross weight (number).	Average net weight of bale (lbs.).	Value per pound (cents).			
1910	11,965,962	12,005,688	480	14.7	.....	.....	.....
1909	10,386,209	10,315,382	475	14.3	4,559,002	6,491,843	151,395
1908	13,432,131	13,587,306	484	9.2	5,198,963	8,889,724	165,451
1907	11,325,882	11,375,461	480	11.5	4,493,028	7,779,508	140,869
1906	13,305,265	13,595,498	490	10.0	4,974,199	8,825,236	202,733
1905	10,725,602	10,804,556	482	10.9	4,877,465	6,975,494	133,464
1904	13,697,310	13,679,954	478	8.7	4,523,208	9,057,397	130,182
1903	10,015,721	10,045,615	480	12.2	3,980,567	6,233,682	100,298
1902	10,784,473	10,827,168	481	8.2	4,187,076	6,913,506	149,113
1901	9,748,546	9,675,771	489	8.1	4,080,287	6,870,313	190,080
1900	10,245,602	10,266,527	480	9.3	3,603,516	6,806,572	116,610

XVIII. PRODUCTION OF METALS IN THE UNITED STATES. (x)

(The Mineral Industry.)

Products.	Measures.	1909.		1910.	
		Quantity.	Value.	Quantity.	Value.
Aluminum	Lb.	15,000,000	$3,345,000	12,000,000	$2,700,000
Antimony	Lb.	6,556,000	422,277	6,775,340	432,367
Copper	Lb.	1,105,336,326	145,451,207	1,086,249,983	138,366,522
Ferromanganese (q)	Long tons.	225,040	9,885,000	224,431	9,533,829
Gold, fine	Troy oz.	4,822,129	99,673,230	4,647,083	96,055,000
Iron, pig	Long tons.	25,570,431	439,290,000	27,074,114	442,311,427
Lead	Short tons.	369,164	31,548,755	392,704	35,919,340
Nickel	Lb.	(e) 500,000	250,000	(w)	
Platinum	Troy oz.	638	15,950	1,025	33,518
Quicksilver	Flasks.	21,215	941,233	22,418	1,054,991
Silver, fine	Troy oz.	54,721,500	28,181,681	56,438,695	30,186,801
Sodium	Sh. t.	(e) 2,000	1,000,000	(e) 2,000	1,000,000
Tin	Sh. t.	(v) 5,515	3,281,425	(e) 5,500	3,751,000
Zinc (y)	Sh. t.	266,462	29,326,808	277,065	30,587,976

(e) Estimated. (o) Flasks of 75 lbs. (q) Includes Spiegeleisen, although the value is given as for ferromanganese. (v) Recovered from scrap metal. (w) Statistics not available. (x) Includes only metal produced from domestic ores except in case of zinc. (y) Includes zinc from foreign ore.

XIX. PRODUCTION OF COAL IN THE UNITED STATES

(The Mineral Industry.)

Bituminous.	1908.	1909.	1910.
	Short Tons.	Short Tons.	Short Tons.
Alabama	11,523,299	12,872,619	15,600,000
Arkansas	1,866,565	(b) 1,940,000	1,200,000
California and Idaho	21,760	18,540	20,000
Colorado	9,703,567	10,736,459	12,104,887
Georgia	301,640	285,700	280,000
Illinois	49,272,452	(c) 49,163,710	49,163,710
Indiana	10,987,419	13,692,089	18,125,244
Iowa	7,149,517	7,166,253	7,660,000
Kansas	5,960,417	6,107,040	5,750,000
Kentucky	9,805,777	10,296,145	13,723,235
Maryland	4,377,094	4,524,112	4,800,000
Michigan	1,839,927	1,758,020	1,620,000
Missouri	3,400,644	3,787,431	3,000,000
Montana	1,879,417	2,541,679	3,050,000
New Mexico	2,772,586	3,010,000	3,616,665
North Dakota	317,840	354,305	385,882
Ohio	26,270,639	27,756,192	32,500,000
Oklahoma	3,633,108	4,192,400	3,400,000
Oregon	(a) 86,259	91,400	80,000
Pennsylvania	118,309,680	136,205,695	144,365,816
Tennessee	6,082,851	7,090,420	6,750,000
Utah	1,786,204	2,322,209	2,526,093
Texas	1,280,490	1,859,259	(d) 1,128,947
Virginia	4,224,821	4,310,360	4,980,000
Washington	2,977,490	3,261,227	3,510,207
West Virginia	(c) 44,370,261	46,697,017	59,690,300
Wyoming	6,100,000	5,020,740	7,469,452
Alaska Nevada	10,240	(b) 16,000	10,000
Total	336,311,964	367,077,021	406,510,438
Anthracite.			
Colorado	69,440	72,100	70,586
New Mexico	(b) 20,000	(b) 14,000	8,000
Pennsylvania	80,240,138	77,040,880	80,310,720
Total	80,329,578	77,126,980	80,389,306

(a) As reported by the U. S. Geological Survey. (b) Estimated. (c) For fiscal year ending June 30.

XX. PRODUCTION OF COKE IN THE UNITED STATES

(*The Mineral Industry.*)

	1908.	1909.	1910.
	Short Tons.	Short Tons.	Short Tons.
Alabama	2,336,602	2,521,000	3,249,027
Colorado	854,662	1,091,882	1,190,901
Georgia & No. Carolina	41,980	(*a*) 50,000	62,000
Illinois	310,540	425,970	390,000
Kansas	10,000	(*a*) 12,000	10,000
Kentucky	54,515	38,849	58,700
Missouri	5,000	(*a*) 5,000	5,000
Montana	29,482	42,960	58,200
New Mexico	353,240	430,000	510,000
Ohio	240,000	250,000	260,000
Oklahoma	24,580	38,620	30,000
Pennsylvania	12,287,828	23,098,483	22,875,000
Tennessee	250,491	255,900	240,000
Utah	321,200	346,510	146,064
Virginia	1,219,927	1,294,942	1,310,000
Washington	37,381	42,335	40,000
West Virginia	(*c*) 2,978,203	3,125,451	3,803,881
The Other States	(*b*) 1,994,218	2,007,000	1,890,000
Total	23,349,849	35,076,902	36,128,773

(*a*) Estimated. (*b*) Includes output of by-product coke for Massachusetts, Maryland, Minnesota, New York, Michigan, Wisconsin. (*c*) Fiscal year ending June 30.

XXI. PIG IRON PRODUCTION OF THE UNITED STATES

(In tons of 2,240 lb.)

(*The Mineral Industry.*)

Kind of Iron.	1905.	1906.	1907.	1908.	1909.	1910.
Foundry & forge	5,837,174	5,714,492	6,397,777	4,307,734	6,386,833	6,350,605
Bessemer pig	12,407,116	13,840,518	13,231,620	7,216,976	10,557,370	11,244,612
Basic pig	4,105,179	5,018,674	5,375,219	4,010,144	8,250,225	9,084,520
Charcoal	352,928	433,007	437,397	249,146	376,003	394,377
Spiegel & ferro	289,983	300,500	339,348	152,018	225,040	224,431
Total	22,992,380	25,307,191	25,781,361	15,936,018	25,795,471	27,298,545

XXII. COPPER PRODUCTION OF THE UNITED STATES

(In pounds.)

(*The Mineral Industry.*)

	1906.	1907.	1908.	1908.	1910.
Alaska	8,700,000	6,610,000	4,394,887	4,057,142	5,008,171
Arizona	263,200,000	256,866,761	290,167,795	292,042,829	229,606,971
California	24,421,000	34,398,823	36,890,353	53,357,451	45,793,894
Colorado	9,565,000	13,344,118	13,896,689	10,487,940	10,127,012
Idaho	9,493,000	11,471,101	8,749,559	7,770,010	6,216,461
Michigan	224,071,000	220,317,041	222,267,444	227,247,998	221,400,864
Montana	299,850,000	226,290,873	252,558,330	313,838,203	286,242,403
Nevada	426,000	1,462,450	12,174,269	51,835,309	63,877,500
New Mexico	6,262,000	8,652,873	8,523,652	5,134,506	3,632,351
Utah	49,712,000	68,333,115	70,978,952	100,438,543	125,042,381
Wyoming	146,000	2,919,137	2,384,356	89,654	180,861
Southern States	18,821,000	22,408,696	20,822,368	22,837,962	18,195,450
Other States	3,379,000	6,166,098	4,387,836	3,746,895	925,664
Total	918,046,000	879,241,086	948,196,490	1,092,884,442	1,086,249,983

XXIII. PRODUCTION OF GOLD IN THE UNITED STATES

(Estimates of the Director of the Mint.)

States.	1909.		1910.		Preliminary 1911.
	Fine Ounces.	Value.	Fine Ounces.	Value.	Value.
Alabama	1,412	$29,200	1,593	$32,900	$18,335
Alaska	984,015	20,339,600	787,148	16,271,800	16,002,976
Arizona	127,082	2,626,800	165,113	3,413,200	2,954,790
California	1,001,625	20,703,600	988,854	20,441,400	20,310,987
Colorado	1,056,923	21,846,600	992,967	20,526,500	19,153,860
Georgia	2,099	43,400	1,161	24,000	30,532
Idaho	65,031	1,344,200	50,113	1,035,900	1,169,261
Montana	181,427	3,750,100	179,974	3,720,400	3,169,840
Nevada	792,752	16,386,200	913,015	18,873,700	18,968,578
New Mexico	12,230	252,800	23,084	477,200	639,897
North Carolina	1,519	31,400	3,122	64,500	76,693
Oregon	40,104	829,000	32,960	681,400	599,235
South Carolina	357	7,400	1,827	37,800	13,437
South Dakota	318,026	6,573,600	260,266	5,380,200	7,430,367
Tennessee	208	4,300	136	2,800	14,140
Texas	19	400	18	400	1,178
Utah	203,836	4,213,300	208,627	4,312,700	4,709,747
Virginia	193	4,000	44	900	4,300
Washington	20,754	429,000	38,992	806,000	504,537
Wyoming	188	3,900	199	4,100	18,791
Other States	309	6,400	283	5,900	44,340
Porto Rico	29	600	50	1,000	2,191
Philippine Islands	11,978	247,600	7,471	154,400	130,501
Miscellaneous					265,013
Total	4,822,116	$99,673,400	4,657,017	$96,269,100	$96,233,526

XXIV. PRODUCTION OF SILVER IN THE UNITED STATES

(Estimates of the Director of the Mint.)

States.	1909.		1910.		Preliminary 1911
	Fine Ounces.	Commercial Value.	Fine Ounces.	Commercial Value.	Fine Ounces.
Alabama	200	$103.	300	$200.	174
Alaska	198,600	102,279.	153,900	83,100.	275,691
Arizona	2,523,600	1,299,654.	2,655,700	1,434,100.	1,594,428
California	2,304,900	1,187,023.5	1,791,600	967,400.	2,727,336
Colorado	8,846,300	4,555,844.5	8,523,000	4,602,400.	7,530,940
Georgia	200	103.	300	200.	225
Idaho	6,755,900	3,479,288.5	7,027,000	3,794,600.	7,507,802
Illinois	900	463.5	2,000	1,100.	4,648
Michigan	217,600	112,064.	262,200	141,600.	507,234
Missouri	15,200	7,828.	32,200	17,400.	56,228
Montana	12,034,500	6,197,767.5	12,282,900	6,632,800.	11,116,778
Nevada	10,119,200	5,211,388.	12,366,000	6,677,600.	10,651,571
New Mexico	324,200	166,963.	779,000	420,600.	1,142,335
North Carolina	400	206.	8,300	4,500.	2,227
Oregon	69,600	35,844.	43,800	23,600.	69,116
South Dakota	196,300	101,094.5	120,600	65,100.	206,188
Tennessee	65,300	33,629.5	69,800	37,700.	126,683
Texas	408,100	210,171.5	364,400	196,800.	442,486
Utah	10,551,100	5,433,816.5	10,445,900	5,640,800.	12,679,633
Virginia	6,400	3,296.	200	100.	45
Washington	75,200	38,728.	204,900	110,600.	142,196
Wyoming	1,800	927.	1,300	700.	1,009
Other States	3,000	1,545.	800	500.	181,659
Philippine Islands	3,000	1,545.	1,800	1,000.	3,383
Miscellaneous					826,102
Total	54,721,500	$28,181,572.5	57,137,900	$30,854,500.	57,796,117

XXV. FISHERIES

Persons Employed, Equipment, and Value of Products, 1908.[1]

(*United States Census.*)

States.	Number of Persons Employed	Vessels. Value, including Outfit.	Boats. Value.	Value of Apparatus of Capture.	Value of Accessory Property and Cash Capital.	Value of Products.
		Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*
Alabama	972	130,127	33,900	23,083	81,603	387,218
Arkansas	998	8,115	36,740	30,966	13,150	207,172
California	4,129	573,322	492,680	501,621	91,300	1,969,727
Connecticut	2,147	994,331	117,870	83,778	1,085,522	2,981,721
Delaware	1,756	334,215	38,100	62,691	9,456	541,204
Florida	9,212	846,414	575,050	325,781	668,283	3,388,690
Georgia	2,525	89,527	79,030	54,505	185,000	700,964
Illinois	4,439	47,226	234,190	271,859	294,075	1,413,242
Indiana	986	7,700	15,530	28,500	22,391	223,145
Iowa	786	.....	37,510	28,879	10,518	214,555
Kentucky	555	.....	11,120	20,890	6,561	110,297
Louisiana	5,795	440,536	353,920	94,550	40,056	1,568,797
Maine	6,861	1,006,543	662,490	576,262	165,655	3,256,581
Maryland	18,392	1,000,780	643,720	368,774	86,035	3,305,673
Massachusetts	11,577	4,282,316	476,850	775,309	215,041	7,095,229
Michigan	3,472	327,232	266,770	820,620	598,591	1,473,055
Minnesota	934	16,054	35,760	42,849	32,685	191,946
Mississippi	2,037	372,434	45,660	57,646	46,246	556,174
Missouri	906	.....	25,350	39,098	27,864	293,479
New Jersey	7,231	709,401	390,580	344,528	269,496	3,068,586
New York	6,775	1,749,961	307,610	361,808	1,412,603	4,593,702
North Carolina	9,681	281,838	251,460	367,426	369,529	1,776,023
Ohio	2,054	214,879	140,900	423,076	342,989	839,581
Oregon	4,772	140,405	367,350	795,488	64,750	1,356,460
Pennsylvania	1,250	254,301	26,060	113,972	87,100	513,110
Rhode Island	1,493	514,538	132,520	229,881	627,483	1,751,819
South Carolina	2,559	50,336	42,030	16,201	5,350	288,328
Tennessee	427	.....	9,360	27,264	13,301	111,856
Texas	1,780	269,337	117,400	41,250	26,344	445,889
Virginia	20,066	1,332,104	733,360	484,597	433,548	4,715,744
Washington	4,954	1,593,562	376,820	1,161,669	309,235	3,513,238
Wisconsin	2,011	243,831	173,300	407,277	275,550	1,067,169
Other States	349	.....	18,190	17,101	3,881	110,255
Total	143,881	17,831,362	7,269,180	8,999,199	7,921,191	54,030,629

[1] These statistics are confined to the fishing industry and do not include packing and canning establishments or wholesale fish dealers.

XXVI. PUBLIC DEBT OF UNITED STATES, JUNE 30, 1911

Interest-bearing debt:	
Loan of 1925, 4%	$118,489,900
Loan of 1908–1918, 3%	63,945,460
Consols of 1930, 2%	646,250,150
Panama Canal loan, 2%	84,631,980
Panama Canal loan, 3%	2,035,700
Debt bearing no interest:	
United States notes (greenbacks)	$346,681,016
National bank notes, redemption account	33,160,228
Old demand notes	53,282
Fractional currency	6,857,391
Debt on which interest has ceased:	
Funded loan of 1891	$30,650
Loan of 1904	13,450
Funded loan of 1907	916,700
Refunding certificates	14,650
Old debt	904,380
Certificates and notes issued on deposits of coin and silver bullion:	
Gold certificates	$994,870,669
Silver certificates	463,499,000
Treasury notes of 1890	3,246,000
Total interest-bearing debt	$915,353,190
Total debt on which interest has ceased	1,879,830
Total debt bearing no interest	386,751,917
Total certificates and notes issued on deposits of coin and silver bullion	1,461,615,669
Total debt, June 30, 1911	$2,765,600,606

XXVII. MERCHANDISE IMPORTED
VALUE AND PER CENT. OF TOTAL VALUE, 1900–11 BY GROUPS

YEAR ENDED JUNE 30.	Foodstuffs in Crude Condition, and Food Animals.		Foodstuffs Partly or Wholly Manufactured.		Crude Materials for Use in Manufacturing.		Manufactures for Further Use in Manufacturing.		Manufactures Ready for Consumption.		Miscellaneous.		Total Value.
	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	
	Dollars.		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*
1900	97,916,293	11.52	133,027,374	15.65	276,241,152	32.50	134,222,045	15.79	203,126,341	23.90	5,407,979	.64	849,941,184
1901	110,385,208	13.43	125,540,654	15.25	248,006,751	30.13	127,576,924	15.49	205,505,580	24.96	6,157,048	.74	823,172,165
1902	120,280,302	13.31	95,350,256	10.56	303,001,868	33.55	147,656,292	16.34	231,420,820	25.62	5,611,410	.62	903,320,948
1903	119,202,674	11.62	116,620,623	11.37	330,491,084	32.22	195,750,847	19.08	257,740,815	25.13	5,896,825	.58	1,025,719,237
1904	132,223,895	13.34	118,222,862	11.93	320,794,431	32.37	160,233,890	16.17	252,812,835	25.51	6,754,620	.68	991,087,371
1905	146,130,903	13.08	145,355,839	13.01	389,160,658	34.82	177,827,960	15.91	252,349,842	22.58	6,665,061	.60	1,117,513,071
1906	134,322,347	10.95	140,358,109	11.44	414,687,999	33.81	220,298,751	17.96	307,674,728	25.10	9,100,980	.74	1,226,562,446
1907	149,747,693	10.44	158,656,263	11.06	477,027,174	33.25	274,096,464	19.11	364,192,884	25.39	10,700,947	.75	1,434,421,425
1908	145,577,427	12.19	147,008,870	12.31	363,823,723	30.43	196,320,135	16.43	331,204,635	27.77	10,406,902	.87	1,194,341,792
1909	164,110,674	12.51	165,700,920	12.63	451,359,259	34.40	222,101,622	16.94	299,106,235	22.80	9,541,514	.72	1,311,920,924
1910	144,776,636	9.30	181,566,572	11.66	566,270,770	36.37	285,138,373	18.31	367,723,367	23.62	11,471,712	.74	1,556,947,430
1911	181,194,863	11.87	172,006,501	11.26	511,362,140	33.48	289,783,652	18.84	361,422,180	23.67	13,454,769	.88	1,527,226,105

XXVIII. DOMESTIC MERCHANDISE EXPORTED
VALUE AND PER CENT. OF TOTAL VALUE, 1900–11 BY GROUPS

YEAR ENDED JUNE 30.	Foodstuffs in Crude Condition, and Food Animals.		Foodstuffs Partly or Wholly Prepared.		Crude Materials for Use in Manufacturing.		Manufactures for Further Use in Manufacturing.		Manufactures Ready for Consumption.		Miscellaneous.		Total Value.
	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	Value.	Per ct.	
	Dollars.		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*		*Dollars.*
1900	227,347,193	16.59	318,126,502	23.21	325,589,000	23.75	152,890,591	11.15	331,955,684	24.22	14,854,601	1.08	1,370,763,571
1901	246,394,140	16.88	336,605,378	23.05	397,767,463	27.24	148,013,625	10.12	317,764,367	21.76	13,917,833	.95	1,460,462,806
1902	184,786,389	13.63	328,831,350	24.27	373,595,243	27.56	131,918,311	9.73	321,946,540	23.75	14,404,028	1.06	1,355,181,861
1903	185,308,064	13.31	323,244,697	23.22	408,442,137	29.34	140,666,864	10.10	327,468,629	23.52	7,100,911	.51	1,392,231,302
1904	135,747,224	9.46	308,836,077	21.52	461,424,464	32.15	174,876,659	12.19	348,734,801	24.30	5,559,792	.38	1,435,179,017
1905	118,185,098	7.92	283,065,098	18.97	472,114,493	31.65	209,926,174	14.07	402,049,798	26.96	6,403,980	.43	1,491,744,641
1906	177,216,467	10.32	347,385,463	20.22	500,536,700	29.14	226,210,513	13.17	459,812,655	26.76	6,791,584	.40	1,717,953,382
1907	167,348,227	9.03	345,706,609	18.65	593,145,135	32.00	259,442,028	14.00	480,681,423	25.93	7,394,612	.40	1,853,718,034
1908	189,051,824	10.30	331,961,663	18.10	556,681,462	30.34	261,105,883	14.23	489,469,958	26.68	6,515,567	.36	1,834,786,357
1909	135,693,409	8.28	302,555,341	18.47	520,907,436	31.80	231,186,607	14.11	440,229,407	26.87	7,783,393	.47	1,638,355,593
1910	109,828,320	6.43	259,259,654	15.16	565,934,957	33.09	267,765,916	15.66	499,215,329	29.19	8,079,822	.47	1,710,083,998
1911	103,401,553	5.13	282,016,883	14.01	713,018,206	35.41	309,151,989	15.35	598,367,852	29.72	7,952,542	.38	2,013,549,025

XXIX. ANNUAL APPROPRIATIONS MADE BY CONGRESS FOR FISCAL YEARS 1903 TO 1912

(*U. S. Statistical Abstract.*)

Appropriated.	1st session 57th Congress. 1903.	2d session 57th Congress. 1904.	1st and 2d sessions, 58th Congress. 1905.	3d session 58th Congress. 1906.	1st session 59th Congress. 1907.	2d session 59th Congress. 1908.	1st session 60th Congress. 1909.	2d session 60th Congress. 1910.	1st and 2d sessions, 61st Congress. 1911.	1912.
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*
To supply deficiencies...	24,944,124	19,651,968	25,083,395	28,998,961	28,165,777	10,509,311	42,662,723	18,913,555	23,045,612	9,738,691
Legislative, executive, and judicial expenses .	25,396,683	27,598,653	28,558,258	29,136,752	29,684,919	32,126,333	32,832,913	32,007,049	34,158,767	35,378,150
Sundry civil expenses...	54,394,601	61,763,709	49,968,011	56,269,468	80,789,470	103,046,481	94,115,143	117,842,109	106,015,198	142,149,144
The army.....	91,730,136	77,888,752	77,070,300	70,396,631	71,817,165	78,634,382	95,382,247	101,195,883	95,440,567	93,374,756
The naval service.....	78,856,363	81,876,791	97,505,140	100,336,679	102,071,670	98,958,507	122,662,485	136,935,199	131,410,568	126,478,338
The Indian service.....	8,986,028	5,540,406	9,447,961	7,923,814	9,260,599	10,123,188	9,253,347	11,854,982	9,266,528	9,129,303
Rivers and harbors.....	32,540,199	20,228,150	10,872,200	26,561,281	17,254,050	43,310,813	18,092,945	29,190,264	49,380,541	23,855,342
Forts and fortifications..	7,298,955	7,188,416	7,518,192	6,747,893	5,053,993	6,898,011	9,316,745	8,170,111	5,617,200	5,473,707
Military Academy.....	2,627,324	652,748	973,947	673,713	1,664,707	1,929,703	845,634	2,531,521	1,856,249	1,163,424
Post-Office Department.										257,539,113
Pensions.....	139,842,230	139,847,600	138,360,700	138,250,100	140,245,500	146,143,000	163,053,000	160,908,000	155,758,000	153,688,000
Consular and diplomatic service.....	1,987,483	1,968,250	2,020,100	2,123,047	3,091,094	3,092,333	3,538,852	3,613,861	4,116,081	3,988,516
Department of Agriculture.....	5,208,960	5,978,160	5,902,040	6,882,690	9,930,440	9,447,290	11,672,106	12,995,036	13,487,636	16,900,016
District of Columbia....	8,544,469	8,638,097	11,018,540	9,801,197	10,232,102	10,440,598	10,001,888	10,699,531	10,608,045	12,057,237
Reclamation fund.....									20,020,000	
Miscellaneous.....	4,081,747	3,025,064	2,860,828	5,139,545	40,172,757	1,079,289	14,086,212	1,327,176	3,544,798	5,000,000
Total.....	486,439,302	461,846,764	467,159,592	489,241,771	549,434,243	555,739,439	627,516,240	648,191,676	663,725,790	895,913,737

Permanent specific appropriations for 1912 estimated by the Secretary of the Treasury..... $129,575,924

Grand Total..... $1,025,489,661

XXX. INTERNAL REVENUE RECEIPTS—1909-1911.

	1909.	1910.	1911.
Spirits	$134,868,034.12	$148,029,311.54	*$155,279,858.25
Tobacco	51,887,178.04	58,118,457.03	67,005,950.56
Fermented Liquors	57,456,411.42	60,572,288.54	64,367,777.65
Oleomargarine	902,197.31	1,099,502.84	1,000,214.79
Filled Cheese	1,942.61	2,847.33	.....
Mixed Flour	2,618.04	3,051.30	2,764.14
Adulterated Butter	38,450.70	37,350.70	47,885.00
Renovated Butter	122,164.75	121,554.73	101,951.68
Miscellaneous	933,722.23	21,972,681.30	34,719,897.66
Total	$246,212,719.22	$289,957,220.16	$322,526,299.73
Corporation Tax	.....	20,959,783.74	33,511,525.00

* Includes $95,596.28 from sale of internal revenue stamps affixed to Philippine products, as provided for in the Act of Aug. 5, 1909.

XXXI. STATISTICS OF CITIES OF 50,000 POPULATION OR OVER.

The figures in the following table, courteously supplied by the treasurers or comptrollers of the various cities, are the latest available. They relate, in general, to the fiscal year ending in 1911; in the case of cities whose fiscal year coincides with the calendar year, the figures are for the year ending Dec. 31, 1910.

	Population.			Assessed Value of Property.	Tax Rate per $1,000.	Indebtedness 1911.	Expenditures.	Revenues.
	1900.	1910.	Increase Per Cent.					
Akron, Ohio	42,728	69,069	61.6	$31,500,000	$32.00	$1,150,000	$1,270,000	$1,300,000
Albany, N. Y.	94,151	100,253	6.5	86,870,070	19.80	2,595,356	3,230,841	3,298,554
Allentown, Pa.	35,416	51,913	46.6	36,301,021	13.90	507,900	385,044	439,729
Altoona, Pa.	38,973	52,127	33.8	25,000,000	25.00	1,669,559	349,296	384,639
Atlanta, Ga.	89,872	154,839	72.3	132,176,183	12.50	6,740,500	3,500,151	4,260,479
Baltimore, Md.	508,957	558,485	9.7	698,135,168	19.80	61,989,361	17,354,289	18,951,827
Birmingham, Ala.	38,415	132,685	245.4	71,820,077	10.00	5,867,000		
Boston, Mass.	560,892	670,585	19.6	1,428,344,814	16.40	72,928,650	34,288,449	37,904,728
Bridgeport, Conn.	70,996	102,054	43.7	89,834,601	17.20	2,107,200	1,863,397	1,800,619
Brockton, Mass.	40,063	56,878	42.0	43,353,741	20.30	3,181,750		
Buffalo, N. Y.	352,387	423,715	20.2	322,760,045	21.955	26,466,931	14,319,984	15,670,048
Cambridge, Mass.	91,886	104,839	14.1	111,581,235	19.90	8,185,050	3,408,966	3,620,303
Camden, N. J.	75,935	94,538	24.5	52,971,283	20.00	4,890,700	2,563,621	2,200,809
Charleston, S. C.	55,807	58,833	5.4	18,784,944	27.95	4,080,500	821,691	896,908
Chicago, Ill.	1,698,575	2,185,283	28.7	848,994,536	14.10	30,897,000	50,878,547	54,559,036
Cincinnati, Ohio	325,902	364,463	11.8	256,253,260	29.94	49,266,911	15,922,129	13,420,385
Cleveland, Ohio	381,768	560,663	46.9	710,000,000	13.60	32,577,228	6,279,953	7,207,811

XXXI. STATISTICS OF CITIES OF 30,000 POPULATION OR OVER—*Continued*

	Population.			Assessed Value of Property.	Tax Rate per $1,000.	Indebtedness 1911.	Expenditures.	Revenues.
	1900.	1910.	Increase Per Cent.					
Columbus, Ohio	125,560	181,584	44.6	$232,000,000	$13.50	$13,806,800	$2,583,475	$3,242,022
Covington, Ky	42,938	53,270	24.1	27,393,970	17.50	2,089,500		
Dallas, Texas	42,638	92,104	116.0	89,218,700	18.20	4,128,250	2,505,855	2,712,436
Dayton, Ohio	85,333	116,577	36.6	62,631,280	29.60	3,939,100		
Denver, Colo	133,859	213,381	59.4	135,467,050	35.00	5,537,400	2,353,260	2,406,761
Des Moines, Iowa	62,139	86,368	39.0	89,478,523	22.50	1,550,199	1,088,905	950,354
Detroit, Mich	285,704	465,766	63.0	377,335,980	18.38	6,910,555	11,276,056	11,138,863
Duluth, Minn	52,969	78,466	48.1	41,384,580	39.30	5,647,000	1,923,561	1,896,486
E. St. Louis, Ill	29,655	58,547	97.4	15,967,544	70.20	712,500	639,588	732,518
Elizabeth, N. J	52,130	73,130	40.8	57,408,431	16.00	3,257,350	1,684,984	1,698,031
Erie, Pa	52,733	66,525	26.2	25,321,493	14.00	280,580	642,072	733,860
Evansville, Ind	59,007	69,647	18.0	38,090,000	27.40	1,800,000	776,859	851,140
Fall River, Mass	119,295	101,863	13.8	94,829,978	19.20	7,295,750	3,365,035	3,576,844
Ft. Wayne, Ind	45,115	63,933	41.7	32,500,900	26.00	560,800		
Ft. Worth, Texas	26,688	73,312	174.7	60,232,146	19.30	5,300,531	1,958,014	1,898,094
Grand Rapids, Mich	87,565	112,571	28.6	89,143,665	19.86	3,802,300	3,317,704	3,125,458
Harrisburg, Pa	50,167	64,186	27.9	47,274,752	9.50	1,838,300	856,261	879,092
Hartford, Conn	79,850	98,915	23.9	9,918,144	16.50	4,880,000	2,332,887	2,425,306
Hoboken, N. J	59,364	70,324	18.5	69,496,462	20.12	2,641,469	1,343,012	1,439,410
Holyoke, Mass	45,712	57,730	26.3	51,843,656	17.00	3,315,200	1,904,547	2,367,560
Houston, Texas	44,633	78,800	76.6	77,294,331	17.00	4,919,000	1,318,298	1,597,314
Indianapolis, Ind	169,164	233,650	38.1	185,714,755	21.90	3,199,300	2,356,745	2,154,192
Jacksonville, Fla	28,429	57,699	103.0	36,238,000	15.00	1,818,973	1,538,989	1,683,235
Jersey City, N. J	206,433	267,779	29.7	241,560,768	19.80	16,201,732	6,391,008	6,680,010
Johnstown, Pa	35,936	55,482	54.4	18,920,055	23.00	506,000	445,542	556,335
Kansas City, Kansas	51,418	82,331	60.1	86,438,635	7.50	5,834,469		
Kansas City, Mo	163,752	248,381	51.7	154,668,947	12.50	4,821,109	5,214,847	5,282,440
Lawrence, Mass	62,559	85,892	37.3	65,446,007	16.40	2,696,800		
Los Angeles, Cal	102,479	319,198	211.5	384,348,760	14.86	25,379,287	11,085,922	13,351,332
Louisville, Ky	204,731	223,928	9.4	180,000,000	18.10	11,984,200	4,263,226	4,352,012
Lowell, Mass	94,969	106,294	11.9	80,094,804	19.60	3,422,490		
Lynn, Mass	68,513	89,336	30.4	77,869,269	19.40	2,775,600		
Manchester, N. H	56,987	70,063	22.9	41,451,846	20.40	1,656,000	1,657,619	1,698,304
Memphis, Tenn	102,320	131,105	28.1	103,257,248	15.90	10,218,400	2,598,010	2,732,658
Milwaukee, Wis	285,315	353,857	31.0	442,932,255	11.65	10,832,400	12,100,193	12,032,954
Minneapolis, Minn	202,718	301,408	48.7	197,036,479	28.00	14,818,867	5,155,473	6,907,645
Mobile, Ala	38,467	51,521	33.9	32,216,959	11.00	3,887,000		
Nashville, Tenn	80,865	110,364	36.5	64,795,570	15.00	5,514,000	2,120,164	1,951,812
Newark, N. J	246,070	347,469	41.2	363,868,614	19.70	26,471,200	6,818,435	8,142,068
New Bedford, Mass	62,442	96,652	54.8	95,573,234	18.40	8,059,752	4,964,704	5,070,284
New Haven, Conn	108,027	133,605	23.7	132,287,726	17.50	3,945,323	3,021,033	2,914,586
New Orleans, La	287,104	339,075	18.1	230,846,187	22.00	35,824,396	8,637,177	8,932,667

XXXI. STATISTICS OF CITIES OF 50,000 POPULATION OR OVER—*Continued*

	Population.			Assessed Value of Property.	Tax Rate per $1,000.	Indebtedness 1911.	Expenditures.	Revenues.
	1900.	1910.	Increase Per Cent.					
New York, N. Y.	3,437,202	4,766,883	38.78	$216,763,287	$17.27 to 18.18	$1,016,646,154	$243,730,715	$248,945,982
Norfolk, Va.	46,624	67,452	44.7	56,475,170	20.00	8,002,550		
Oakland, Cal.	66,960	150,174	124.3	129,220,575	19.80	4,907,350	3,398,946	2,234,059
Oklahoma City, Okla.	10,037	64,205	539.7	95,173,338	17.80	3,396,000	1,782,581	1,624,581
Omaha, Neb.	102,555	124,096	21.0	164,167,720	12.96	5,995,000	4,889,298	4,776,463
Passaic, N. J.	27,777	54,773	97.2	37,516,260	1.49	1,470,750	1,362,223	1,334,916
Paterson, N. J.	105,171	125,600	19.4	98,065,630	16.90	4,274,500	5,012,388	4,985,923
Pawtucket, R. I.	39,231	51,622	31.5	49,212,220	16.50	4,679,436	1,257,266	1,247,513
Peoria, Ill.	56,100	66,950	19.3	20,860,375	45.00	536,000	595,927	530,320
Philadelphia, Pa.	1,293,697	1,549,008	19.7	1,516,178,772	15.00	100,483,820	54,056,526	48,282,848
Pittsburg, Pa.	451,512	533,905	18.2	755,818,383	7.50	41,681,660	20,135,359	28,449,570
Portland, Me.	50,145	58,571	16.8	62,118,030	21.60	3,025,145		
Portland, Ore.	90,426	207,214	129.2	274,394,720	6.00	13,789,490	4,202,230	5,648,630
Providence, R. I.	175,597	224,326	27.8	265,924,140	16.50	19,673,650	6,507,507	6,709,335
Reading, Pa.	78,961	96,071	21.7	54,312,000	9.00	661,000	635,611	659,436
Richmond, Va.	85,050	127,628	50.1	137,516,429	17.50	11,231,158	3,370,839	2,784,974
Rochester, N. Y.	162,608	218,149	34.2	160,646,632	18.97	14,073,882	4,294,409	4,294,409
Saginaw, Mich.	42,345	50,510	19.3	26,964,641	23.63	2,185,304	1,271,405	1,303,412
Salt Lake City, Utah.	53,531	92,777	73.3	60,784,673	13.00	4,398,000	1,457,877	1,579,127
San Antonio, Texas.	53,321	96,614	81.2	81,900,525	19.36	2,574,500		
San Francisco, Cal.	342,782	416,912	21.6	545,064,347	20.00	18,800,200	17,356,286	18,600,655
Savannah, Ga.	54,244	65,064	19.9	48,689,875	26.40	2,680,150	1,263,388	1,296,936
Schenectady, N. Y.	31,682	72,826	129.9	48,631,260	22.60	3,717,027	1,897,945	1,965,397
Scranton, Pa.	102,026	129,867	27.3	81,390,615	7.03	1,234,486	7,055,211	1,064,540
Seattle, Wash.	80,670	237,194	194.0	211,887,076	14.65	12,926,195	5,511,455	5,128,425
Somerville, Mass.	61,643	77,236	25.3	66,376,339	19.10	1,519,000		
So. Bend, Ind.	35,999	53,684	49.1	27,401,980	12.90	475,500		
Spokane, Wash.	36,848	104,402	183.3	92,309,756	13.00	4,150,808	2,138,565	2,275,364
Springfield, Mass.	62,059	88,926	43.3	128,053,034	16.50	6,239,900		
St. Joseph, Mo.	102,979	77,403	24.8	38,490,590	13.00	1,220,250	4,323,362	3,920,563
St. Louis, Mo.	575,238	687,029	19.4	572,917,140	22.20	27,625,006	10,613,496	13,253,973
St. Paul, Minn.	163,065	214,744	31.7	125,281,180	29.20	10,014,000	7,666,920	8,926,226
Syracuse, N. Y.	108,374	137,249	26.6	105,499,277	19.38	10,018,305	2,083,464	2,083,464
Tacoma, Wash.	37,714	83,743	122.0	69,299,288	12.00	11,011,712	4,836,907	5,978,832
Terre Haute, Ind.	36,673	58,157	52.6	35,047,711	11.15	592,000	409,301	413,620
Toledo, Ohio.	131,822	168,497	27.8	83,002,390	33.80	9,220,594		
Trenton, N. J.	73,307	96,815	32.1	67,924,185	19.60	6,636,231	2,643,419	2,573,588
Troy, N. Y.	60,651	76,813	26.6	57,764,009	23.12	1,991,270		
Utica, N. Y.	56,383	74,416	32.0	44,404,740	19.36	1,666,757	1,100,000	1,105,000
Washington, D. C.	278,718	331,069	18.8	330,322,487	15.00	11,608,495	13,402,135	13,302,715
Waterbury, Conn.	45,859	73,141	59.5	63,500,000	16.00	2,495,000		
Wichita, Kan.	118,421	145,986	23.3	64,133,116	15.70	1,577,504	1,823,804	1,915,153

XXXII. ANNUAL CRUDE DEATH RATES PER 1,000 PERSONS LIVING, 1901–1909

[*Furnished by the United States Census.*]

UNITED STATES.[1]	Annual Average 1901–05.	Number of Deaths[4] from All Causes per 1,000 population.	
		1909.	1910.
Registration area[2]	16.3	14.4	15.0
Per cent. of total population	40.7	56.1	58.3
California	[3]	13.4	13.5
Colorado	[3]	14.2	13.8
Connecticut	16.0	15.0	15.6
Indiana	13.0	12.9	13.5
Maine	16.0	15.6	17.1
Maryland	[3]	15.5	16.0
Massachusetts	16.6	15.4	16.1
Michigan	13.2	13.1	14.1
Minnesota	.....	[3]	10.9
Montana	.....	[3]	10.6
New Hampshire	16.4	16.9	17.3
New Jersey	16.1	14.7	15.5
New York	17.1	15.7	16.1
North Carolina[5]	.....	[3]	18.7
Ohio	[3]	12.9	13.7
Pennsylvania	[3]	14.7	15.6
Rhode Island	17.8	15.6	17.1
South Dakota	[3]	.....	.....
Utah	.....	[3]	10.8
Vermont	16.2	15.7	16.0
Washington	[3]	9.8	10.0
Wisconsin	[3]	11.8	12.0
Registration cities of 100,000 population or over in 1910:			
Birmingham, Ala.	.....	18.2	19.5
Los Angeles, Cal.	.....	13.7	14.0
Oakland, Cal.	.....	14.2	12.7
San Francisco, Cal.	20.9	15.0	15.1
Denver, Colo.	17.2	17.0	16.4
Bridgeport, Conn.	.....	14.4	15.2
New Haven, Conn.	17.3	16.9	16.5
Washington, D. C.	20.5	19.0	19.6
Atlanta, Ga.	.....	17.2	18.9
Chicago, Ill.	14.5	14.6	15.1
Indianapolis, Ind.	15.4	14.3	16.3
Louisville, Ky.	18.6	15.5	16.7
New Orleans, La.	22.4	20.2	21.3
Baltimore, Md.	20.0	18.7	19.2
Boston, Mass.	18.8	16.8	17.2
Cambridge, Mass.	.....	14.7	15.0

UNITED STATES.[1]	Annual Average[4] 1901–05.	Number of Deaths[4] from All Causes per 1,000 population.	
		1909.	1910.
Registration cities of 100,000 population or over in 1910:			
Fall River, Mass.	20.3	19.1	18.4
Lowell, Mass.	.....	18.0	19.7
Worcester, Mass.	16.8	15.5	16.9
Detroit, Mich.	15.0	14.0	15.9
Grand Rapids, Mich.	.....	11.9	14.6
Minneapolis, Minn.	10.2	10.7	12.3
St. Paul, Minn.	10.0	11.4	11.9
Kansas City, Mo.	15.9	14.4	15.9
St. Louis, Mo.	17.9	15.8	15.8
Omaha, Neb.	11.1	14.7	15.1
Jersey City, N. J.	19.3	16.8	16.3
Newark, N. J.	18.7	16.5	16.5
Paterson, N. J.	16.9	15.3	14.7
Albany, N. Y.	.....	17.6	19.4
Buffalo, N. Y.	15.5	15.2	16.3
New York, N. Y.	19.0	16.0	16.0
Bronx Borough	20.9	15.9	15.9
Brooklyn Borough	18.2	15.4	15.6
Manhattan Boro.	19.5	16.6	16.5
Queens Borough	16.1	14.2	13.8
Richmond Boro.	19.0	18.1	17.0
Rochester, N. Y.	14.6	14.4	14.6
Syracuse, N. Y.	14.5	14.5	15.4
Cincinnati, Ohio	19.1	16.5	17.4
Cleveland, Ohio	14.9	12.9	14.3
Columbus, Ohio	15.4	14.0	15.4
Dayton, Ohio	.....	15.4	14.8
Toledo, Ohio	14.3	14.6	14.6
Portland, Ore.	.....	9.8	11.0
Philadelphia, Pa.	18.1	16.4	17.4
Pittsburgh, Pa.	19.9	15.8	17.9
Scranton, Pa.	16.2	16.3	16.4
Providence, R. I.	18.8	16.1	17.7
Memphis, Tenn.	18.3	20.1	21.4
Nashville, Tenn.	.....	18.1	18.7
Richmond, Va.	.....	20.7	22.6
Seattle, Wash.	.....	10.0	10.1
Spokane, Wash.	.....	12.6	13.0
Milwaukee, Wis.	13.2	13.7	13.8

[1] Deaths are not registered in many states. The rates given are for that part of the country included in the "registration area" by the Census Office, and for which satisfactory returns are obtainable. All rates are based on revised estimates of population derived from the census of 1910 or state censuses of 1905, except as indicated.

[2] Includes District of Columbia.

[3] Non-registration.

[4] Exclusive of stillbirths.

[5] Includes only municipalities having a population of 1,000 or over in 1900.

III. PROBLEMS OF POPULATION

W. F. Willcox

THE THIRTEENTH CENSUS

GEOGRAPHICAL DISTRIBUTION OF POPULATION

Density.—The enumerated population of the United States April 15, 1910, was 91,972,266. This total is for the United States exclusive of Alaska, the Panama Canal zone, Hawaii and Samoa, as well as the islands acquired by the late war with Spain. With the addition of figures, some of them approximate, for these outlying districts the total population of the country is 101,738,000. As the population of the earth is estimated by the best authorities to be in the neighborhood of 1,600,000,000, the United States now includes about one-sixteenth of the population of the earth. And as the land surface of the United States, including its dependencies, is 3,690,714 square miles and the land surface of the earth is about 55,887,000 square miles, the United States now embraces about the same proportion of the earth's land surface and of the earth's population. To be sure, there is a wide margin of error in the estimates of the earth's population, owing to differences of nearly 200,000,000 between careful guesses of the population of China. That there is also a wide margin of error in the estimates of land surface appears from the recent addition of an area equal to that of the United States because Antarctic exploration has suggested that one-half the ice cap around the South Pole is probably underlain by land. Still the comparison establishes the inference that the United States with its dependencies is now about as well settled as the average for the world as a whole.

It might be thought that a fairer comparison of density of population would be with the inhabited land surface of the earth, which is approximately two-thirds of the total surface. But according to the estimates of the Department of Agriculture, the United States, exclusive of Alaska and the islands, includes more than 1,500,000 sq. miles, or 50 per cent. of its area, which is untillable. This might fairly be called desert. In Alaska nearly all the surface falls into this class. Hence the United States has at least the world's average proportion of desert as well as the world's average density of population.

Distribution.—The area of the United States is roughly divisible into a western two-fifths and an eastern three-fifths by a line following the eastern boundaries of Montana, Wyoming, Colorado and New Mexico. The region west of that line with two-fifths of the area contains one-thirteenth of the population of the country. The region east of that line is subdivided by Mason and Dixon's line, the Ohio River and the southern boundary of Missouri and Kansas into two nearly equal parts, the northern states and the southern states. Of these two sections, the northern has nearly twice the population of the southern. The relation of these three in area and population appears from the following table:

	Area.	Population in Thousands.	Per Cent. of Total	
			Area.	Population.
Northern states	918,143	55,757	30.9	60.6
Southern states	878,326	29,389	29.5	32.0
Western states	1,177,690	6,826	39.6	7.4
Continental United States	2,974,159	91,972	100.0	100.0

The Southern States contain about the same proportion of the population as they do of the area; the Northern States contain about twice the proportion of population that they do of area; and the Western States, about five times the proportion of area that they do of population. The states east of the Mississippi include about three-tenths of the area and seven-tenths of the population; those west of the Mississippi, about seven-tenths of the area and three-tenths of the population.

The most populous states arranged in the order of numbers with the per cent. that each contains of the entire population of the country were the following:

Leading States in Order of Population.	Population in Thousands (1910).	Per Cent. of Country's Population.	Cumulative Per Cent.
New York	9,114	9.9	9.9
Pennsylvania	7,665	8.3	18.2
Illinois	5,639	6.1	24.3
Ohio	4,767	5.2	29.5
Texas	3,897	4.2	33.7
Massachusetts	3,366	3.7	37.4
Missouri	3,293	3.6	41.0
Michigan	2,810	3.1	44.1
Indiana	2,701	2.9	47.0
Georgia	2,609	2.8	49.8
New Jersey	2,537	2.8	52.6

The preceding 11 states include all having more than two and one-half million inhabitants. Together they contain more than one-half of the population of the country and so more than the other 38 states. Three states contain nearly one-fourth; five states, more than one-third; and ten states nearly one-half of the country's population. The same 11 states in 1900 included only 47.9 per cent. and the 11 largest states (with Iowa in place of New Jersey) included 48.3 per cent. of the population of the country. This shows that the most populous states as a class have been gaining numbers more rapidly than the less populous states.

INCREASE OF POPULATION

Rate.—The most surprising result of the thirteenth census which has yet been published has been the very large population reported. Between 1870 and 1900 the decennial rate of increase in the population of the United States steadily fell as follows:

	Per Cent. of Increase.
1870-1880	30.1
1880-1890	24.9
1890-1900	20.7

This series of figures led most persons to suppose that the increase 1900-1910 would not be above 19 per cent. The census results showed it to be 21.0 per cent. Even this figure is a little below the actual rate of decennial increase, because the census of 1910 was taken a month and a half earlier in the year than the census of 1900 and the interval between them was only 9⅞ years. After allowing for this change, the rate of decennial increase 1900-1910 is found to be 21.3 per cent., or 0.6 per

cent. above that of 1890-1900. The following table shows the rates of increase in each of the three great groups of states, the North, the South and the West:

	Population in Thousands,			Per Cent. of Increase,	
	1890.	1900.	1910.	1890–1900.	1900–1910.
North	39,817	47,380	55,757	19.0	17.7
South	20,028	24,524	29,389	22.4	19.8
West	3,102	4,091	6,826	31.9	66.7

Distribution.—This shows that in each decade the Southern States increased in population faster than the Northern, and the Western faster than either of the others. The rate of increase both of the North and of the South, however, in the later decade was notably less than in the earlier, the decrease for the North being 1.3 per cent. and for the South 2.6 per cent., or twice as great. The fact that the rate of increase of the United States was slightly greater between 1900 and 1910 than it was between 1890 and 1900 was due entirely to the fact that the Western States as a whole grew in the later decade more than twice as fast as in the earlier. Disregarding the Western States, the increase of the rest of the country 1890-1900 was 20.1, and 1900-1910 it was 18.4, or about what would have been anticipated. The Western States raised the average for the rest of the country 1890-1900 by 0.6 per cent. and 1900-1910 by 2.6 per cent., or more than four times as much.

The Growth of the West.—Every one of the 11 states and territories in the Western Division, including even Nevada, which for the 20 years 1880-1900 had been the only state in the Union to lose population, increased more rapidly than the average for the entire country. Every one of these eleven, except Montana, also had a higher rate of growth 1900-1910 than the same state had 1890-1900. The growth of the Rocky Mountain and Pacific Coast states in its effect upon the growth of the country is the surprise of the census.

URBAN AND RURAL POPULATION

Distribution.—The urban population includes that of all incorporated places having at least 2,500 inhabitants and in New England also that of all unincorporated towns of the same size. Of the population of the entire country in 1910, the number of urban residents was 42,623,383, or 46.3 per cent. of the total. If the states be ranged in the order of their urban population, it appears that six states, New York, Pennsylvania, Illinois, Massachusetts, Ohio and New Jersey, all northern states east of the Mississippi, contain more than one-half of the urban population of the country, and so more city dwellers than the other forty-three states combined. The rural population is distributed much more evenly than the urban. Arranged in order of decreasing numbers of rural population the twelve states which together contain one-half the rural population of the country were Pennsylvania, Texas, Illinois, Ohio, Georgia, New York, Missouri, North Carolina, Alabama, Tennessee, Kentucky and Virginia. Five of these are Northern states and seven are Southern. The rural population of the South, 22,765,000, is almost exactly the same as the rural population of the North, 23,087,000; but the urban population of the entire South, 6,624,000, is only one-fifth the urban population of the North, 32,670,000. The urban population of the entire South is materially less than the urban population of New York State alone.

Increase.—The total increase of sixteen millions (15,977,691) in the population of the United States, 1900-1910, was divided as follows: increase in cities 11,036,000, increase

in country districts 4,942,000. Thus nearly seven-tenths (69 per cent.) of the growth was urban growth and only three-tenths was rural growth. In the preceding decade the increase in the cities of 2,500 or more was 8,024,000 and the increase in the rural population was 5,023,000. The actual growth of city population 1900-1910 was 37.5 per cent. greater than 1890-1900 and the actual growth of rural population was 1.4 per cent. less. Of the total growth of population 1890 to 1900 about six-tenths was in the cities; of the growth 1900 to 1910 about seven-tenths was in the cities.

The proportion of urban population in the total of the country was as follows:

	Per Cent.	Increase, Per Cent.
1890	36.1	...
1900	40.5	4.4
1910	46.3	5.8

It seems safe to predict that by 1920 more than one-half of the population of the country will be living in cities.

The increase of urban population 1900-1910 was at the rate of 34.9 per cent., that of the country districts, at the rate of 11.1 per cent. The cities as a class are growing three times as fast as the country. Outside of the rapidly growing Western and West-South-Central States the cities in different parts of the country are growing with approximately the same rapidity, ranging only from 21.5 per cent. for the cities of New England up to 33.1 for the cities of the Middle Atlantic States. The rural population, on the other hand, shows much wider differences from an actual decline in New England and the Eastern-North-Central States to an increase of 12.3 per cent. in the rural districts of the South Atlantic States. Seven states, New Hampshire, Vermont, Ohio, Indiana, Illinois, Iowa and Missouri, register an actual decrease of rural population. Seven others, Maine, Massachusetts, Connecticut, New York, Michigan, Kentucky and Tennessee, have an increase of less than 5 per cent., less than half the average for the rural population of the country.

If the states be arranged in the order of the rate of growth of rural population from Iowa, with a loss of 7.2 per cent. to Oklahoma, with a gain of 90.7 per cent. in rural population, and a total made to include just enough states to have the increases and decreases balance, it appears that there are 16 states in which, treated as a unit, the rural population has been stationary. They include all the New England States (with the unimportant exception of Rhode Island, New York, Virginia), all the Central States east of the Mississippi and north of the southern boundary of Tennessee, and, west of the Mississippi, Iowa and Missouri. These 16 states had a rural population of 20,132,078 in 1900 and 20,143,370 in 1910, an increase of 11,297, or 0.056 per cent. (See also XXII, *Agriculture.*)

CLASSIFICATION ACCORDING TO RACE

The population of the United States in 1910 was classified by race, according to the preliminary results of the Thirteenth Census, as follows:

	1910.	Per Cent. in	
		1900.	1910.
White	81,732,687	87.9	88.9
Negro	9,828,294	11.6	10.7
Other races	411,285	0.5	0.4
Total	91,972,266	100.0	100.0

The proportion of whites rapidly increased between 1900 and 1910 and that of Negroes and of other races (Indian and Mongolian) decreased.

Negroes.—The proportion of Negroes in the United States in 1910 was little more than one-half as great as it was in 1790 and apparently in 1920 will be just about one-half. For this decrease there is one important geographical reason—the more rapid growth of population in the Northern States. The following figures show the proportion of Negroes in the population of the United States at each census:

Date.	Per Cent. Negro in Total Population.
1790	19.3
1800	18.9
1810	19.0
1820	18.4
1830	18.1
1840	16.8
1850	15.7
1860	14.1
1870	12.7
1880	13.1
1890	11.9
1900	11.6
1910	10.7

In 1790, the population living south of Mason and Dixon's line was practically as numerous as the population to the north of that line (1,961,000 in the South and 1,968,000 in the North). A century later the population of the South (19,800,000) was only one-half that of the North (39,800,000). A class of the population, mainly resident in the South, as the Negroes are, is likely to share in that region's rate of growth. For this reason the proportion of Negroes in the Southern States is perhaps more significant than the proportion of Negroes in the whole country. That proportion at each census has been as follows:

Date.	Per Cent. of Negroes in Population of Southern States.
1790	35.2
1800	35.0
1810	36.7
1820	37.2
1830	37.9
1840	38.0
1850	37.3
1860	36.8
1870	36.0
1880	36.1
1890	33.7
1900	32.3
1910	29.8

In the Southern States the proportion of Negroes was practically unchanged between 1790 and 1880, the lowest proportion being 35.0 in 1800 and the highest 38.0 in 1840, a range of only 3 per cent. in 90 years. But since 1880 the fall in the proportion of Negroes in the South has been clearly marked, 6.3 per cent. in 30 years, an average of 2.1 per cent. in a decade. The evidence indicates that since emancipation and reconstruction the rate of increase of the Negro race in the South has not been keeping pace with that of southern whites.

This is due no doubt in large measure to the fact that the Southern States receive reinforcements to their white population in the shape of immigrants from other parts of the country and to some extent from abroad. The Negroes have no such reservoir to draw upon, but on the contrary their rate of increase in the South is checked by their migration in increasing numbers and proportions to other parts of the country. The proportion of Negroes living in other parts of the country at recent dates was:

Date.	Negroes in United States outside of Southern States.	Per Cent. of Total Number in the Country.
1880	626,890	9.5
1890	728,099	9.7
1900	911,025	10.3
1910	1,078,904	11.0

The change is slow but has been in the same direction for thirty years and at an accelerating rate.

Nativity.—The white population of the United States in 1910 was composed of the following groups by nativity:

Class.	Number.	Per Cent. of All Whites.
Native white of native parents	49,488,411	60.5
Native white of foreign parents	18,900,663	23.2
Total native white	68,389,104	83.7
Foreign-born white	13,343,583	16.3
Total white	81,732,687	100.0

At the present time the foreign-born population of the United States and their children in the first generation constitute about two-fifths (39.5 per cent.) of the white population of the country, and persons born in the United States of native parents constitute about three-fifths. Since 1900 the proportion of the foreign-born has increased from 15.3 to 16.3 per cent. and that of each other class has diminished slightly. The amount and rate of increase of each element were as follows:

Increase of Population, 1900–1910.

	Number.	Per Cent.
Native white of native parents	8,539,079	20.9
Native white of foreign-born parents	3,254,646	20.9
Foreign-born white	3,129,766	30.6
Total white	14,923,491	22.3

The rate of increase of the foreign-born population was about one and one-half times that of the native white population of either native or foreign-born parentage.

IMMIGRATION

THE IMMIGRATION COMMISSION

Constitution and Duties.—An Immigration Commission, composed of three Senators, three Representatives and three other persons appointed by the President, was created in Feb., 1907, as an outgrowth of differences of opinion at that session between the Senate and the House. The Senate favored the imposition of further restrictions upon immigration in the form of a literacy test, that is, the proven ability to read some language, for all would-be immigrants over 16 years of age, and the increase of the head-tax on immigrants from $2 to $5. These provisions were favored by the House Committee on Immigration and Naturalization but struck out by the House itself. This body went upon record as opposing a radical change of the country's immigration policy in the direction of greater restriction.

The duties of the commission thus appointed were to make full inquiry into the subject of immigration and to report to Congress its conclusions and recommendations. Apparently its main work was to gather and present evidence bearing upon these differences of judgment between the two branches of Congress in the effort to bring public opinion both in and out of Congress into greater harmony. The commission ended its duties in Dec., 1910 and its "Conclusions and Recommendations" have been printed in brief.

Recommendations.—The Commission urged that the following principles of legislation be emphasized:

1. The quantity and quality of immigration should not be such as to make its assimilation too difficult.

2. Further legislation should be based primarily upon a regard for the prosperity and economic welfare of the people.

3. Such welfare depends primarily on the citizen's opportunity for development, material, mental and moral.

4. A slow expansion facilitating the assimilation of immigrants is better than a rapid expansion attended by much immigration of laborers with low standards of living and with consequent peril to the American standards of wages and labor conditions.

The Commission made the following recommendations among others:

a. That for the protection of immigrants, government officials, both men and women, be placed on vessels carrying steerage passengers.

b. That the boards of special inquiry, which pass upon the appeals of would-be immigrants from adverse administrative decisions, should be composed of persons qualified to exercise judicial functions, that the hearings should be public and that an Assistant Secretaryship of Commerce and Labor should be created to review appeals from the boards.

c. That the State should strictly regulate immigrant banks and employment agencies.

d. That the exclusion of Chinese laborers should be continued.

e. That no legislation regarding Japanese and Korean labor should be adopted so long as the present method of restriction is found effective.

f. That an understanding should be reached with the British Government for the exclusion of East Indian laborers.

Unskilled Labor.—Probably the most important conclusion of the commission is that the country at present has an oversupply of unskilled labor. Consequently it recommended such further restriction as to produce a marked effect upon the supply of unskilled labor, especially of persons who have no intention of residing permanently in the United States. (See also XVI, *Labor Legislation.*)

The methods of restriction suggested were (*a*) a literacy test; (*b*) limitation of the annual number of immigrants of each race to a certain percentage of the previous annual average; (*c*) excluding unskilled laborers without wives or families; (*d*) limitation of the number to be admitted annually at any port; (*e*) material increase of the money each immigrant must show; (*f*) material increase of the head tax; (*g*) heavier head tax on men without families. Of these a majority of the committee favored the literacy test as the most feasible single method of restriction.

The numerous volumes containing the final results of its labors have not yet been made available but are likely to be in print by the time this book is before its readers. The main conclusions of the preliminary reports now in print may be briefly summarized.

Steerage Conditions.—Data for this report were gathered by agents of the commission travelling in the steerage on trans-Atlantic lines and on coastwise vessels carrying immigrants. The report pertains to conditions before Jan. 1, 1909, when the new law regulating steerage accommodations became effective. The well known conditions of the old type were often found and vividly described. The new type, with conditions approximating those of the second cabin, though simpler, were found to some extent on immigrant vessels coming from northern Europe. Sometimes both types existed on the same boat.

In the old type, cleanliness, discipline and, in many cases, even chastity are endangered. That proper conditions are appreciated by passengers in vessels of this class is seen wherever accommodations of the new type are found.

The farce of inspection required of boats and passengers is clearly portrayed; the systematic exploitation of immigrants on board the ships and at ports of entry by agents of telegraph companies and commissary clerks is described.

In view of the recent passage of a new law regarding steerage conditions which seemed likely to be satisfactory, the commission merely made the recommendation already mentioned, providing for placing government officials, both men and women, on immigrant vessels, the expense to be borne by the steamship companies.

Importing Women for Immoral Purposes.—This report covers investigations in 12 large cities and data gathered by personal association of the commission's agents with the classes involved as well as from other sources. Some of the topics are: extent, profits and effects of the traffic; recruiting; methods of importation; system of exploitation; interstate and local conditions. The report contains a number of important recommendations as to changes in the law or its administration. Owing to differences of views regarding prostitution, coöperation by foreign countries is to be expected mainly in the prevention of

seduction of minors and the fraudulent or forcible exportation of adult women. The United States government will have to depend mainly on its own officers for the suppression of this traffic.

Immigrant Banks.—The report covers over 100 representative immigrant banks, *i. e.*, concerns making a practice of receiving from aliens deposits or money for transmission abroad. The data were supplemented by interviews with responsible immigrant business men and bankers, and with city and court officers. The report does not cover New York City, because state and federal authorities had already investigated conditions there.

A peculiarity of these banks is that they represent only races of southern and eastern Europe. Depositors are usually recent arrivals, ignorant of business methods, suspicious of American institutions and trustful of compatriots, especially of the steamship agent, who seems the only link between them and the fatherland.

"Immigrant bankers" are sometimes shrewd and intelligent business men, but more often irresponsible and ignorant of banking methods, while frequently their only qualification seems common nationality with patrons. They gain a hold over their customers by performing services which the regular bank cannot—they maintain banking hours in the evenings and on Sundays, a matter of controlling importance to the day laborer; they serve as interpreters, intermediaries, legal advisers, correspondents, forwarders of mail, notaries public, labor agents, grocers, saloon keepers; frequently furnish board and lodging, cash checks, etc., and act as steamship agents. This manifold relation between banker and customer is a double source of evil; it allows many forms of exploitation and furnishes the principal investment for the "bank's" funds.

Some of the abuses found are false advertising implying governmental or large financial backing; use of term notary public or its equivalent, which is misleading because the name represents much less here than in the "old country"; almost absolute lack of bookkeeping, the private affairs of the banker and those of the bank often being indistinguishable; frequent failure to give adequate receipt for funds; investment of deposits in private business or worthless securities; redeposit in banks, the interest being appropriated by the immigrant banker; lack of capital and reserve, so that the depositor has no redress in case of loss, while the average amount of the deposit is too small to warrant a suit to recover. In the case of money left for transmission abroad, the system is so lax that the purchaser of a money order has no satisfactory evidence of deposit and no means of fixing responsibility in case of loss. It is common also for passbooks representing deposits in foreign banks to be left with immigrant bankers without receipts. The chance for fraud is obvious. Even where there is no disposition to defraud, the likelihood of loss to the depositor is enormous.

Only two states have any definite control of these institutions, most of which are unincorporated and operated by individuals. The need for control over them is everywhere felt, even among the responsible proprietors themselves. The depositors are of the class least able to afford loss, and by reason of the numbers affected, failure of such a bank is most disastrous. The greatest difficulty in legislation is to frame laws regulating them without injuring legitimate banks and at the same time meeting the constitutional test of non-discrimination. Control will always be most difficult because of the countless private individuals who receive money for safe keeping. Such laws as exist are discussed by the report and the suggestion made that officers charged with administration over banks should be required frequently and thoroughly to examine such institutions, backed by proper machinery to enforce the law.

Changes in the Bodily Form of Descendants of Immigrants.—What has already been said regarding the commission's report indicates the importance it attached to the problem of assimilation. In economic

and social matters apparently no test of assimilation was used by the commission. But in the study of physical assimilation a new and promising line of study was opened in measuring the head form of Sicilians and east European Hebrews in New York City. Until the full details are made public the following summary of the provisional results must suffice:

(1) Immigrants coming to this country and living in the crowded parts of New York City have children the shape of whose head departs widely from that of their parents.

(2) Where the parental type is long-headed, or dolichocephalic, the children are less dolichocephalic; where the parental type is round-headed, or brachycephalic, the children are less brachycephalic.

(3) The departure from the ancestral type appears even in cases where the children born abroad have been brought to this country in early childhood; it is more marked among children born in this country, and the longer the interval between the arrival of the mother and the birth of the child, the more the shape of the child's head differs from that of its parents.

(4) The changes are great enough to make the difference between the shape of the head among a round-headed stock, like persons of east European Hebrew blood born in the United States, and a long-headed stock, like persons of Sicilian blood born in the United States, less than the difference between either group of children and their parents.

These results are the more surprising because the shape of the head has been thought an extremely persistent characteristic, controlled almost entirely by hereditary influences and very little by environment. Although far from conclusive, they seem to warrant at least a suspense of judgment upon that point. If they could be accepted at their face value, they would show that the process of physical assimilation of immigrants begins sooner, progresses more rapidly and affects the whole system more radically than has hitherto been believed.

The Immigration Situation in Canada.—Immigration has assumed great importance for Canada because of the development of its western territory, especially British Columbia. In proportion to population Canada received more immigrants between 1900 and 1909 than did the United States. Canada affords an interesting example of a country with a definite immigration policy consistently followed to accomplish certain results. This report describes fully the propaganda and expenditures in this field. Canada's policy consists in encouraging the immigration of farmers and farm laborers only; all others are definitely advised not to emigrate. The result is that, for example between 1907 and 1909, over 38 per cent. of the immigrants to Canada were of the agricultural class. In contrast, only 16 per cent. of those coming to the United States were of that class, but it should be noted that this figure does not include accompanying women and children, as does the Canadian figure. Over 78 per cent. of these farmers and farm laborers immigrating to Canada were from the United States.

The chief contrast between Canadian and United States immigration laws is that a laborer arriving there *without* assurance of definite employment is likely to be debarred; while one coming here *with* such assurance, if it be discovered by the immigration officers, will be debarred as a contract laborer. Another difference in the laws is that those of Canada do not exclude polygamists and anarchists. An appendix to the report gives the full text of the laws of the two countries.

The report discusses immigration from the United States to Canada and from Canada to the United States. To encourage the former, an active propaganda is conducted, as a result of which the United States is furnishing about one-third of the total immigrants. In the homestead entries for 1909 every state and territory, except Delaware and Mississippi, were represented, but more than one-half were from North Dakota and Minnesota. Immigration thitherward within recent years has

approximated 60,000 annually; the United States Commissioner of Immigration in Canada estimates that about 15,000 return to this country annually.

Oriental immigration is the topic of an interesting section. This, as in our country, is practically a Pacific Coast phenomenon, British Columbia being the Canadian province affected. Exclusion of the Chinese through imposition of a head tax was not effective until the amount was raised to $500 (Jan. 1, 1904), whereupon Chinese immigration fell to almost nothing. Oddly enough, however, in three years this created such a monopoly of Chinese labor as to make immigration profitable despite the head tax.

The influx of Japanese through Hawaii in 1907 doubled their number in British Columbia (7,500 at the beginning of that year) and, taken in connection with the increasing numbers of Chinese and Hindus, so aroused the inhabitants that, by agreement with Japan, passports are now limited to 400 annually.

Hindu immigration increased from insignificant numbers prior to 1907 to over 2,500 in that and the following year. Their exclusion, since they are British subjects, was a most delicate matter, the accomplishment of which was an extremely interesting bit of diplomacy.

IMMIGRATION FROM CANADA

The preliminary announcement of the results of the Canadian census of June, 1911, show a total population of 7,151,869 and an increase of one-third, 33.2 per cent. in ten years. For the first time in several decades Canada has increased in population more rapidly than this country. The increase, however, did not equal the expectations. A total of eight million, or an increase of one half over 1901 had been confidently predicted. Probably the main reason is that the Canadian estimates fail to allow enough for the steady and large but unrecorded drift of Canadians by birth and immigrants to Canada southward into the United States. Regarding the former current the American birthplace statistics afford some information. The great majority of Canadians by birth are living either in Canada or in the United States. Disregarding those who have emigrated to some other country, the figures since 1871 are as follows:

Date.	Canadians by Birth in Canada or United States (in Thousands).	Canadians by Birth in United States (in Thousands).	Per Cent. in United States.
1871	3,386	493	14.6
1881	4,433	717	16.2
1891	5,169	981	19.0
1901	5,943	1,181	19.9

One-fifth of all Canadians by birth are living in the United States and four-fifths in Canada.

NATURALIZATION

Under the terms of the naturalization act of June 29, 1906, a division of naturalization was established in the Bureau of Immigration and Naturalization to supervise and make uniform the process of naturalization before the state or the federal courts. In the fiscal year 1909-1910 there were 2,472 courts issuing certificates of naturalization, of which 227, or 9 per cent., were federal courts and 2,247, or 91 per cent., were state courts. The number of certificates of naturalization issued annually since the law went into effect is:

1906-07 (nine months)	7,953
1907-08	25,963
1908-09	38,372
1909-10	39,206

But of the certificates issued more than one-fourth come from the federal courts. It has been estimated that probably just before the new law took effect in the vicinity of 100,000 persons were naturalized annually.

IV. AMERICAN HISTORY

G. H. Blakeslee

INTRODUCTION

Political Parties.—The year 1911 has been marked by notable political changes. The Republican party, so long in power in the national government, lost its control of the House of Representatives and had its own ranks divided into the two fairly distinct groups of "Progressives" and "Regulars." Political issues have aroused as keen an interest as before, but they have not been fought on strictly party lines. The great public questions—those of reciprocity, tariff revision, the control of trusts and corporations, the conservation of national resources, and the ratification of the new arbitration treaties with Great Britain and France—have none of them been presented as clear-cut issues between the two great parties. On each the Republican leaders have been divided. President Taft signed the Reciprocity act, which was opposed by the majority of his party in Congress, and vetoed the tariff bills, which received the support of progressive Republicans.

Political Changes.—For 14 years before 1911 the Republican party controlled the Presidency, the Senate and the House of Representatives; but the elections in the fall of 1910 deprived it of its majority in the House and cut down its membership in the Senate. The 61st Congress, which came to an end March 4, 1911, had a Republican majority of 28 in the Senate and 45 in the House; the 62nd, which convened a month later, April 4, had a Republican majority of but 11 in the Senate, and a Democratic majority of 67 in the House. The exact figures are: 61st Congress, Senate, 60 Republicans, 32 Democrats; House, 217 Republicans, 172 Democrats; 62nd Congress, Senate, 51 Republicans, 40 Democrats (1 vacancy); House, 160 Republicans, 228 Democrats (1 Socialist and 2 vacancies).

The result has been to compel the President to depend upon a politically divided Congress for the enactment of legislation, a situation, however, not at all unusual in the past. In the last half century there have been 16 years during which the President's party has been in a minority in at least one branch of Congress; this happened in the administrations of Grant, Hayes, Garfield, Harrison, and in both of those of Cleveland. During eight of these years—the whole of Hayes's administration and half of each of Cleveland's—the President was politically opposed to both Houses.

The Republican defeat in 1910 has also many precedents. From 1874 to 1894 every administration in turn lost its mid-term Congressional elections.

The state elections in the fall of 1910 were equally unfortunate for the Republicans. In 1911 the number of Republican governors fell from 26 to 21, while the number of Democratic governors increased from 20 to 25. This overturn was caused by Maine, Massachusetts, Connecticut, New York, New Jersey, Idaho, Oregon and Wyoming electing Democratic in place of Republican executives; while Nebraska, Nevada and Tennessee changed from Democratic to Republican control. In 1910, 27 state legislatures were Republican and 19 Democratic; in 1911 22 were Republican and 24 Democratic. This change came from the Republicans losing the legislatures of Maine, New

York, New Jersey, West Virginia, Ohio and Montana and gaining that of Nevada.

Political Issues.—In regard to the leading political issues there has seemed to be a weakening of party ties. Each side has had its progressives and its conservatives, although the division among the Republicans has been the most marked. On many questions the Progressives, or Insurgents, as they are often called, have been more in sympathy with the Democrats than with the majority of their own party; and an alliance of Progressives and Democrats was in control of Congress for a large part of the Special Session, which lasted from April to August. A short account of the leading issues in 1911 will make clearer the somewhat complicated political situation.

RECIPROCITY

The reciprocity issue is not a new one in American politics, although it has never before occupied such an important position as it has held during the past year. As early as 1844 President Tyler negotiated a reciprocity agreement with the German Zollverein, although it failed of ratification in the Senate.

Canadian Reciprocity, 1854-1866.—In 1854 a treaty was concluded with Great Britain which provided for reciprocity with Canada. Its provisions were in general similar to those of the proposed agreement of the past year. The purely economic questions involved, however, were complicated by political considerations; the Canadian authorities desired to moderate the strong annexation sentiment which existed in their country at that time, while much of the approval given to the treaty in the United States was due to the belief that it would be a step towards political union. After a few years some opposition was shown to the treaty by certain of the American transportation, mining, lumber and agricultural interests, but the real factor which caused its termination was not at all economic, but political; it was the hostility engendered against Great Britain and Canada by the Civil War. By vote of Congress in 1865, the reciprocal trade relations with Canada came to an end in 1866. The important fact in this agreement is that it granted reciprocity in raw materials which both countries produced alike, and that it did not apply to manufactures. "Its results," in the words of an eminent economist, "were of altogether far less importance than might have been expected."

Reciprocity, 1875-1911.—A treaty of reciprocity with Hawaii, signed in 1875, provided for the free admission into the United States of Hawaiian sugar, in return for the free admission into Hawaii of a long list of American manufactures. It remained in force until the annexation of the islands in 1898.

When the McKinley bill (1890) was under consideration in the Senate, Blaine, who was then Secretary of State, persuaded those in charge of the measure to add a reciprocity section. This authorized the President to levy specified duties upon sugar, coffee, tea and hides, otherwise admitted free, unless the countries which exported these products should grant adequate reductions to American goods. It was, in a way, a tariff of retaliation rather than of reciprocity. In accordance with the terms of the act, reciprocity agreements were made with several countries in Central and South America and with Germany and Austria in Europe.

The Wilson Act, 1894, a Democratic measure, repealed all the existing reciprocity agreements except that with Hawaii.

When the Republican party again came into power in 1896, it framed the Dingley Act, which once more contained a reciprocity section. This empowered the President to grant to foreign countries, in return for proper trade concessions, the free admission into the United States of an extremely limited list of non-competitive products. It also authorized the President to negotiate general treaties, by which reductions of 20 per cent. on the regular United States tariff rates should be granted. Although President McKinley submitted several such

reciprocity agreements, yet the Republican Senate refused to ratify any of them, on the ground that concessions had been made on products which competed with American goods. McKinley, however, continued until his death to urge the necessity of reciprocity.

In 1903 Congress passed a Cuban reciprocity act, which provided that the exports of the two countries should receive mutual reductions of 20 per cent. from the regular tariff rates. The bill was bitterly opposed on the ground that it granted reciprocity in competitive products. It divided the Republican party in Congress and was passed only under a strong sense of the necessity of fulfilling a peculiar moral obligation to this new American protectorate.

Reciprocity Treaty, 1911.—The next reciprocity struggle was over the ratification of the recent agreement between the governments of Canada and the United States, which was signed Jan. 21, 1911. (See also V, *International Relations.*) For many years after 1866 Canada made every effort to induce the United States to grant mutual reductions in tariff; but the American government was too well satisfied with its high protective system to make any changes. There was, however, from 1872 to 1884 a so-called reciprocity treaty which related to the fisheries; and as late as 1898 an American commission, appointed to consider the possibility of reciprocity, proposed that complete free trade be established between the two countries upon the condition that Canada should adopt the United States tariff. This offer was refused. In 1909 the Payne-Aldrich Tariff omitted all reciprocity provisions—with the exception of particular concessions granted to the Philippines—and adopted the maximum-minimum principle. In order to obtain satisfactory trade privileges from Canada in exchange for the minimum rate, President Taft in March, 1910, held a conference at Albany with the Canadian Minister of Finance. Before the meeting was concluded, it was arranged that a future conference should be held to consider the question of freer trade relations between the two countries. In the following November (1910), three American commissioners arranged with two members of the Dominion Cabinet the Canadian Reciprocity treaty. This was, however, merely a gentlemen's agreement between the two Governments by which they mutually promised to secure, if possible, the enactment by their respective legislatures of an identical reciprocity act.

The President's Views.—President Taft sent this agreement to the two Houses Jan. 26, 1911. It provided for free trade in all primary food products, such as grain, vegetables, animals and fish; a mutual lowering of duties on secondary food products, such as meat and flour; and reductions on manufactured goods. The President in his official messages and in his public speeches declared that reciprocity with Canada fulfilled the tariff pledge of the last Republican platform, which promised to abolish or lower existing rates except where they should be needed to equalize the difference in cost of production at home and abroad. The cost of living in Canada and in the United States, the President said, was substantially the same; the two peoples were "of the same race, intelligence, conditions and traditions" and would find mutual freedom of trade as advantageous as had the different sections of the United States. The treaty would enlarge the supply of natural resources upon which the United States could draw, especially in timber and woodpulp. It would probably not reduce the cost of food products to the consumer, but it would prevent any great increase of cost in the future. It would not injure the farmers, however, since the price of the few cereals, such as wheat, which can be raised more cheaply in Canada than in the United States, is determined not by the American but by the Liverpool market, which sets the world price for all such products. In regard to manufactures, the government obtained the best bargain possible; it wished for absolute free trade in everything, but the tariff concessions obtained were sufficient to give a valuable opening for American goods.

The President pointed to the advantages resulting from the recent

reciprocity agreements with Cuba, 1903, which gave mutual reductions of 20 per cent. from the regular tariff rates; with Porto Rico, 1901, which established complete free trade; and with the Philippines, 1909, which permitted free trade with some limitation upon the amount of sugar, tobacco and rice which might be exported to the United States. Before these agreements were made, he said, they were opposed by the American sugar and tobacco growers, who insisted that they would be injured by reciprocity; since they went into effect not a single complaint had been made, not an American interest had been harmed, and, on the other hand, the United States had been benefited by an enormous increase in its trade with these lands. President Taft urged the passage of the Canadian bill without amendments, and pointed out that if this opportunity should be neglected, no similar one would probably come again, since Canada would then turn to a system of rigid British preference.

In Congress.—When a bill to carry out this agreement was introduced into the House by Congressman McCall, it caused a violent split in the Republican ranks. Historically, the party as a whole has never agreed to any reciprocity other than that in non-competitive products, such as coffee and tea; but a number of the leaders, Blaine, Sherman, McKinley and Roosevelt, together with a large proportion of the party, have stood for reciprocity, when desirable, in products which competed with those of the United States. The majority of the Republicans in Congress, including nearly all of the Progressives, opposed the measure, claiming that it was a betrayal of the principle of protection, in that it took away from the farmers the benefits of a duty upon imported agricultural products just at a time when they needed it most, and yet retained it upon manufactured goods. These Congressmen well represented the intense opposition of the farmers of the West and of the lumber and print-paper interests. The Democrats, who as a party had held no clear-cut policy on the question, now decided in caucus to support the bill. It passed the House Feb. 14 by 221 to 93, although the majority of the Republicans voted against it.

When it reached the Senate and a determined opposition developed, the President announced that if no action were taken on the bill before Congress came to an end March 4, he would call the new Congress, the 62nd, in special session to pass upon it.

The Special Session.—Since a number of Republicans, Progressives and Regulars, prevented the measure coming to a vote before adjournment, President Taft summoned the new Congress to meet April 4. When it convened, the former reciprocity bill was again introduced into the House, this time by the leader of the Democratic majority, Congressman Underwood. April 21 it was passed, 267 to 89, by the same combination as before, a minority of the Republicans and the almost solid vote of the Democrats.

In the Senate the bill was referred to the Finance Committee, which, after adopting an amendment proposed by Senator Root, reported the measure back to the Senate without recommendation. The Root amendment provided that wood pulp (for the making of paper) should not be admitted free into the United States until all restrictions on its export from Canada, levied by any of the individual provinces, should be removed. This was in exact accord with the original agreement, but the bill passed by the House provided that wood pulp from Canadian lands on which there were no export restrictions should be admitted free at once.

After the bill had been reported from the Committee it was bitterly opposed, especially by the Progressive Republicans, most of whom came from the farming states of the West. Senator La Follette led the attack and characterized the measure as a good bargain for the trusts, since they would obtain free of duty many raw materials, especially different kinds of grain; for the newspapers, since they would have cheaper print paper; and for Canada, since it would obtain more for its agricultural produce; but bad for the American farmers, since they would be compelled to meet the

competition of more fertile farms worked by relatively cheap labor; and of no value to the consumer, since, as was admitted by all, it would not reduce the prices of food products. The political result of this debate was to accentuate the growing antagonism of the Progressives towards the administration.

After all amendments had been voted down, including the one proposed by Senator Root, the bill was finally passed July 22, 53 (32 Democrats and 21 Republicans) to 27 (24 Republicans and 3 Democrats). The act was to go into effect when a corresponding measure should be passed by the Canadian Parliament.

In Canada.—The question of reciprocity has also been the absorbing political issue of the year in Canada. The measure was introduced into the Canadian Parliament in January by Prime Minister Laurier, who had been the head of the Liberal Government since 1896. Although until about ten years ago both parties in Canada had strongly favored reciprocity, this bill encountered a violent opposition from manufacturing interests which have recently benefited from high protection; from the railroad companies, which believed that they would be in danger of losing much of their traffic to American lines; and also from the patriotic loyalists, who feared that reciprocity with the United States would weaken the bonds of their connection with the rest of the British Empire. In general, the manufacturing and financial interests of the East opposed the bill, while the grain-growing sections of the West seemed to demand it. After the measure had been debated for four months, and the Conservatives had resorted to every expedient to prevent a vote being taken, Laurier finally dissolved Parliament July 29 and appealed to the people.

In the campaign which followed, the Conservatives, led by Robert L. Borden, attacked reciprocity upon the ground that it involved political danger to Canada. It was even claimed that the United States was directly aiming at annexation, and in proof of this reference was frequently made to a speech of Champ Clark, in which he said, in the House of Representatives: "I am for it because I hope to see the day when the American flag will float over every square foot of the British North American possessions clear to the North Pole." President Taft's words that "Canada was at the parting of the ways" were often quoted to show that the United States was offering Canada a choice between British Imperialism and an American economic union. Kipling's letter to the Canadian people is believed to have had great influence; he said that he could not understand "how 9,000,000 people can enter into such arrangements as are proposed with 90,000,000 strangers on an open frontier of 4,000 miles and at the same time preserve their national integrity." It was this fear that reciprocity endangered the political future of Canada, that it would place the country too completely under the influence and power of the United States, which decided the elections. Sept. 21 the Conservatives won an almost unprecedented victory, and secured a new Parliament overwhelmingly opposed to reciprocity.

The Present Status.—Notwithstanding Canada's rejection of reciprocity, the act passed by the United States Congress and signed by President Taft still remains in force. It is a standing invitation to the Canadian people to enter into closer and more friendly trade relations.

The only direct result of the reciprocity act is the admission into the United States free of duty of Canadian wood pulp, provided it comes from lands upon which no export restrictions have been placed by any of the provincial governments. (See also VI, *Canada;* XIV, *Public Finance;* and XXII, *Agriculture.*)

THE TARIFF

In addition to the controversy over reciprocity, the tariff discussion of the past year has centered about the attempts made in Congress to create a permanent Tariff Commission; to supplement the Reciprocity Bill by

the so-called "farmers' free-list" bill; and to revise the wool, cotton, and other schedules of the Payne-Aldrich Act of 1909. None of these measures represented administration policies, except that relating to the tariff board. With this exception they expressed the general dissatisfaction with the existing law and the insistent demand for the immediate reduction of the high rates of the schedules attacked.

The Democratic Policy.—Even before the assembling of the special session of Congress on April 4, the Democrats had made it known that, with a considerable majority in the House, they would endeavor to pass some tariff-revision legislation. They felt called upon to do this since they believed that the elections of 1910 had given them a clear mandate to remove the inequalities of the existing tariff law. But some disagreement developed in their ranks as to the proper method of revision. At a meeting of leaders—not including Wm. J. Bryan—held in Baltimore, late in January, Senator Bailey declared for a complete revision of the entire tariff; Champ Clark declared for revision "schedule by schedule," if not "item by item." Representative Underwood, who was to be Chairman of the House Committee on Ways and Means, shared Mr. Clark's view and this prevailed. While the Republicans witnessed with pleasure this apparent split among the Democrats, who were expected also to be divided into protectionists and advocates of tariff for revenue only, the sequel showed that their ranks were massed solidly on every clearly Democratic position.

The Tariff Commission Bill.—As a part of the general policy of tariff revision one schedule at a time, on the basis of difference in cost at home and abroad, President Taft had contended for a permanent tariff board or commission having extensive powers of investigation into such costs. Although this policy met with much favor in the country, the Payne-Aldrich Act of 1909 had simply authorized the President to employ "such persons as may be required" to secure information needed for the application of the maximum and minimum principle and for the administration of the tariff law. The President took a liberal view of the authority conferred upon him and organized the "such persons" into a tariff board of three members. The strong approval of the country forced Congress to sanction the temporary existence of the board by appropriating the $250,000 asked for it by the President for the fiscal year 1910-11.

But a more permanent board with greater powers was demanded by the President and a considerable part of the country. Early in the year the Committee on Ways and Means introduced a bill providing for a permanent tariff commission of five members, not more than three to be from any one political party, which should report directly to Congress as well as to the President. In order to insure the freedom of the commission from the quadrennial political disturbance its members were to be appointed for terms of six years. The main object of the commission was declared to be the investigation of comparative costs of production at home and abroad, but it was also to study the condition of foreign trade and the effects thereon of foreign tariffs and bounties.

The bill passed the House on Jan. 30 by 186 to 93. Thirty Democrats and all but three Republicans voted for it. Although it was opposed in the Senate by certain Democrats led by Senator Bailey of Texas and by some of the regular Republicans, it was passed March 4 by a combination of all factions, but not without amendment. In the few hours that remained of the session the bill was killed in the House by a Democratic filibuster.

Meanwhile Congress had appropriated $225,000 for the existing board for the year 1911-12; and had requested it to report on the wool schedule by Dec. 1 following. Early in March the President announced the appointment of two more men to the board, thus making it a bi-partisan board of five members. The new appointees were Thos. W. Page, Professor of Economics at the University of Virginia, and former Congressman Wm. M. Howard of Georgia, both Democrats.

Farmers' Free List Bill.—This was the first of the revision plans in the

Democratic program for the Special Session. It was introduced on April 19 by Chairman Underwood of the Ways and Means Committee, and was commonly called the "farmers' free-list" bill. Its main purpose was to offset the losses which might be suffered by the farmers as a result of the enactment of the reciprocity measure. Chairman Underwood pointed out that this latter bill took away from farmers all the supposed protection for their products but did not similarly remove duties from the things which they must buy. More than a hundred articles were in the list to be admitted free, including agricultural implements, cotton bagging, leather, shoes, fresh meats, flour, timber and sewing machines. It was claimed that most of these articles were under trust control and that therefore they ought to be admitted without duty in the interest not only of the farmers but of the general public.

The debate on this bill in the House began April 26, and, after many ineffectual attempts to amend it, it was passed May 8 by 236 to 109. All the Democrats present, 24 Republicans and one Socialist voted for it. In the Senate it failed at first by a tie vote, but after amendment was passed Aug. 1 by 48 to 30, all the Democrats and 12 Republicans, mostly Progessives, voting for it. With minor changes the Conference report was passed Aug. 17. The following day the President sent in his veto.

The reasons given by President Taft for this veto were, first, that revision should not be attempted until the Tariff Board had reported on the articles affected; secondly, that the list was "so loosely drawn as to involve the Government in endless litigation and to leave the commercial community in disastrous doubt"; thirdly, that it admitted finished products free while other schedules retained duties on the raw materials and the machinery used, thus placing the home manufacturer at a great disadvantage; and, fourthly, that the bill would not reduce prices for consumers.

This veto did not arouse the interest in the country which followed the wool veto, for the free-list bill was widely regarded as largely a bid for the vote of the farmers who had been alienated by the reciprocity measure. (See XIV, *Public Finance.*)

The Wool Bill.—Ever since 1816 there has been a tariff on both raw wool and woolen goods, with the exception that raw wool was admitted free from 1857 to 1861, and from 1894 to 1897. The woolen schedule has been complicated primarily through the necessity of granting to the woolen manufacturers a duty higher than that which would naturally be given, as compensation for the high price of raw wool caused by the tariff on that commodity. Moreover, the wool tariff has been made yet more complex by special duties on particular grades of wool and woolens, and, most of the time since 1860, by a combination of specific and *ad valorem* duties. Since the Dingley Act of 1897 the wool schedule, known in recent years as Schedule K, has remained unchanged. From 1898 to 1910, inclusive, the average *ad valorem* rate on unmanufactured wool has been about 48 per cent.; and that on manufactures of wool about 93 per cent.; these being on the whole the highest protection ever given to these industries.

The failure of the Republicans to reduce the wool duties was one of the principal causes of dissatisfaction with the tariff act of 1909, and was in part responsible for the defeat of the party in the 1910 elections. The Democrats therefore let it be known, even before the meeting of the Special Session of Congress, that they would make attempts to lower the wool rates. June 6th, Chairman Underwood of the House Ways and Means Committee submitted a bill for the revision of Schedule K. The 253-page report which accompanied it recalled President Taft's condemnation of the wool rates; contended that the compensatory duties on manufactured woolens were too high; and set forth grounds for a general reduction of the entire schedule. It estimated that the loss in revenue from lower duties would be about offset by a larger importation.

The bill reduced the *ad valorem* duty on raw wool from about 48 to 20 per cent., and made corresponding

reductions in the duties on woolens. It passed the House on June 20 by 221 to 100. The majority included 23 Republicans, mostly Progressives. In the Senate a rival bill was introduced by Senator La Follette. This was a very moderate measure, fixing the duty on raw wool at 35 per cent. The Committee on Finance refused to report on the bill until ordered to do so by a coalition of Progressive Republicans and Democrats, and then reported adversely. On July 27 this same coalition passed the La Follette measure by 48 to 32. The matter was then taken up in conference by Senator La Follette and Chairman Underwood. They agreed upon 29 per cent. as the compromise rate on raw wool, and about 48 per cent. as the average duty on manufactured woolens. This conference report passed the House Aug. 14 by 206 to 90, and the Senate Aug. 15 by 38 to 28.

Though the bill was passed by large majorities, President Taft vetoed it. In his message he stated that he had been elected on a platform which fixed the proper measure of protection at the difference between American and foreign costs of production. In order to determine what rates would afford such protection he declared full and accurate information to be necessary, especially for such a complicated set of duties as that included in Schedule K. Congress had itself asked for such information, and the Tariff Board had promised it by Dec. 1. Moreover, argued the President, "there is no public exigency requiring the revision of Schedule K in August without adequate information rather than in December next with such information."

An attempt, Aug. 18, by the House coalition to pass the wool bill over the President's veto fell short of the necessary two-thirds vote by the narrow margin of 14. (See XIV, *Public Finance.*)

The Cotton Bill.—The cotton industry, like the woolen, has been protected ever since 1816. The duties, too, have been so complicated by special rates of various kinds and, at times, by a combination of specific and *ad valorem* duties, that they have been very difficult to understand. One of the features of the Payne-Aldrich Act most frequently criticized was the increase in the duties on cotton gloves and hosiery and on the cheaper grades of cotton cloths. Some of the most telling attacks of the late Senator Dolliver and other Progressives on that act had to do with the intricacies of the cotton schedule. The Democrats early included an attempt at the revision of these rates in their program for the special session. July 26, a bill making large reductions in these cotton duties was introduced in the House. In a painstaking report accompanying it Chairman Underwood stated that the value of the cotton goods purchased in the United States in 1910 was $839,000,000. The average *ad valorem* equivalent of the duties on the cotton goods imported during that same year was 56.04 per cent., but these were so high that they were nearly prohibitive. Assuming that the duties increased prices by 25 per cent. (less than one-half the duty), the report claimed that the American people, in 1910, paid $200,000,000 more for their cotton goods than they would have done had there been no tariff.

This bill passed the House Aug. 3 by 202 to 91, 30 Progressive Republicans voting with the Democrats in its favor. In the Senate a rival bill introduced by Senator La Follette and making a somewhat smaller reduction in the duties, was supported by the Progressives, who held the balance of power between the Regular Republicans and the Democrats. While the Progressives favored a reduction of duties, they yet believed in the protective principle, and in the perfecting of the wool bill especially were able to force the Democrats largely to adopt their views before they would permit the measure to pass. But during the progress of this cotton bill the Regular Republicans either absented themselves or refrained from voting, with the result that the Democrats were left in full control of the Senate, and were able to pass distinctively Democratic provisions not only without the aid of the Progressives, but against their votes. This breaking up of the Democratic-Progressive alliance was intensely satisfactory to the regular

Republicans, for the La Follette group of Progressives had exerted power out of all proportion to their numbers and had greatly enhanced their political prestige in certain parts of the country.

Before passage in the Senate the bill had attached to it amendments revising the iron and steel schedule; making a horizontal reduction of 25 per cent. in the chemical schedule; and reducing to 30 per cent. the duty on all machinery used in cotton manufacture. Thus amended it passed the Senate Aug. 17 by a vote of 29 to 24. Being accepted by the House, it was sent to the President, who promptly vetoed it.

In this veto President Taft reiterated his contention for a preliminary report from the Tariff Board. He also held that this bill was avowedly based on the principle of tariff for revenue only, whereas he favored moderate protection. But his greatest objection was to the tacking on of so many and so varied amendments. The metals schedule especially, he said, is long and worthy of careful analysis. Finally the whole measure he denounced as "empirical and haphazard." No attempt was made in the House to pass this bill over the veto. (See XIV, *Public Finance.*)

Attitude of the Country.—The opinion of the press as to the probable effect of the tariff legislation on the fortunes of the various political groups was anything but unanimous. On the one hand, the President was criticized for vetoing downward revision bills in the face of such urgent demand for lower duties, especially in the case of the wool schedule, which he had himself declared to be "indefensible"; on the other, he was widely commended for his determined stand for a "scientific revision" on the basis of established and unbiased facts. Republican opinion was sharply divided between these two points of view. The Democrats won general approval for the admirable manner in which they maintained a united stand on their own program. On the whole, the tariff controversy of the special session seemed to result in strengthening the Democratic party.

Tariff Board's Report on Wool Schedule.—The President, in a special message to Congress, Dec. 20, transmitted the long-awaited report of the Tariff Board on the wool schedule of the Payne-Aldrich act. The summary of the Board's findings, which altogether made up five large manuscript volumes, shows that most of the duties on raw wool, yarn and woolen cloth (except some of the best grades) are too high, either prohibitive or more than the difference between the cost of production in the United States and in foreign countries. The industry evidently needs protection, since the cost of raising wool is higher than it is abroad, of turning the wool into yarn 80 per cent. more than in foreign lands, and of manufacturing the yarn into cloth 100 per cent. more than in either England or France. This excessive cost, moreover, due in considerable measure to the higher wages paid, is not counterbalanced by any superiority in machinery or labor efficiency.

The American consumer does not pay for his domestic cloth the foreign price plus the whole amount of the duty. Sixteen English fabrics, examined by the Board, would pay an average duty, if imported into the United States, of 183 per cent.; yet these same fabrics made in this country sell for only 67 per cent. above the foreign value, the price being lowered by competition between American manufacturers. The report does not believe in the existence of a wool trust; it says, "At the present time the industry is on a competitive basis."

The Board made no recommendations as to definite tariff rates, but suggested that the present *ad valorem* duty on uncleaned wool should be changed to a specific duty on the estimated scoured or cleaned content of the wool; and that there should be a gradually increasing *ad valorem* duty on cloth.

President Taft urged Congress to proceed with a downward revision based upon the findings of the Board. He stated that the five members were unanimous, and "that no legislative body has ever had presented to it a more complete and exhaustive report than this."

THE CONSERVATION QUESTION

Conservation, as a political issue, has been overshadowed the past year by reciprocity and the tariff, yet it has attracted considerable discussion, and certain acts of the administration have been sharply criticized, especially those throwing open to private entry lands on Controller Bay, Alaska.

Secretary Ballinger, whose official attitude in regard to matters of conservation was so strongly assailed in 1909 and 1910 by Gifford Pinchot and his followers, was still Secretary of the Department of the Interior at the beginning of 1911. At that time there were before Congress the two reports from the committee appointed to investigate his official conduct. The minority report sustained the charges made by Mr. Pinchot and Mr. Glavis that he was favorable to the great financial interests (see YEAR BOOK, 1910, pp. 42-43); the majority acquitted him of all misconduct, but suggested some changes in policy looking towards a better protection of national resources. Congress, however, took no action upon these reports, and the criticisms of Secretary Ballinger continued until he resigned his office early in March. It then appeared that his resignation had been offered before but had been withdrawn upon request of the President. In his final letter President Taft said (see also XII, *Alaska*):

> I do not hesitate to say that you have been the object of one of the most unscrupulous conspiracies for the defamation of character that history can show. . . . With the hypocritical pretense that they did not accuse you of corruption in order to avoid the necessity that even the worst criminal is entitled to, to wit, that of a definitely formulated charge of some misconduct, they showered you with suspicion and by the most pettifogging methods exploited to the public matters which had no revelancy to an issue of either corruption or efficiency in office, but which, paraded before an hysterical body of headline-readers, served to blacken your character and to obscure the proper issue of your honesty and effectiveness as a public servant.

The new Secretary chosen by the President to succeed Mr. Ballinger was W. L. Fisher of Chicago, known as an intimate friend of Mr. Pinchot, and a strong advocate of the most advanced ideas on conservation. At the time of his appointment he was Vice-President of the National Conservation Association.

The Cunningham Claims.—The Cunningham claims, which were the cause of the attack upon Secretary Ballinger—for he was supposed to favor them—were disallowed in June by Commissioner Dennett, of the General Land Office, and his superior, Secretary Fisher. These claims, 33 in number, were for a part of one of the richest coal sections in Alaska. According to the law in existence at the time the claims were filed, each individual was permitted to secure no more than 160 acres, and was forbidden to combine with others for the purpose of forming a company or corporation which should work the claims as a whole. The aim of the law was to prevent such a monopoly of the coal lands of Alaska as had occurred in Pennsylvania. It was urged by Mr. Pinchot that the 33 Cunningham claimants had not only formed an illegal combination, but had sold whatever rights they had to the Guggenheim syndicate. The disallowance of these claims was regarded by the conservationists as a defeat for the monopolistic interests and a victory for those who would preserve the resources of Alaska for the use of the people as a whole.

Controller Bay.—The supporters of an advanced conservation policy had barely ceased rejoicing over the rejection of these claims when they again felt the necessity of defending Alaska from the financial interests, which they believed were now trying to monopolize the coal supply by obtaining a monopoly of transportation to and from the mines. They pointed out that the only outlet to the ocean from the Bering Coal fields, in which lay the Cunningham claims, which was not already more or less under the control of the Guggenheim syndicate, was Controller Bay; and that over 12,000 acres of this shore land had recently been thrown open by

the President to private ownership. This land would be used by a syndicate headed by R. S. Ryan for a railroad to the mines, 25 miles distant.

So general and severe was the criticism of the President's action that he defended himself in a special message sent to the United States Senate July 26. He explained that plenty of shore land on Controller Bay had been reserved by the Government to permit other railroad companies to build lines to the coal fields in competition with the Ryan syndicate; that no monopoly was possible, for, by law, every third quarter-mile of the shore was retained in absolute ownership by the government. Finally he said:

> The rates of freight for coal to be charged, of course, would always be subject to Congressional control, and if government ownership seemed a wise policy under the peculiar circumstances, ample land for right of way, harbor frontage, and terminals must always remain available under the law for government use. . . . The thing which Alaska needs is development, and where rights and franchises can be properly granted to encourage investment and construction of railroads without conferring exclusive privileges, I believe it to be in accordance with good policy to grant them.

President Taft believes in the development of the country by privately-built railroad companies, under a strict government supervision. But the more radical conservationists insist that conditions are sufficiently peculiar in Alaska to justify government ownership, either of terminal facilities or of the entire railway line. Col. Roosevelt, who represents this point of view, said in the *Outlook*, July 22:

"The government should have held this land in perpetuity, permitting its use by any individual or corporation only under conditions that would subserve the general public interest." Three weeks later he wrote: "If difficulties occur in connection with what has been done in Controller Bay, I feel that it would be a good thing for the United States to build and operate the short line of railway (with its terminals)."

Undeveloped Alaska.—Practically all of the claims to the Alaskan coal fields have been held up by the Land Office. The result is that Alaska suffers; its development is checked; its vast deposits of coal cannot be used; and the steamship companies, the railroad lines, and the small factories must either use oil as fuel or else import their supplies at exorbitant prices from British Columbia. The natural indignation of the territory at this policy of the Government led to a typically American demonstration at Cordova, May 4. With thoughts of the Boston Tea Party in mind, some 300 representative citizens marched to the wharves of the steamship company and, in protest against the shutting up of their own resources, shovelled into the bay many tons of British Columbia coal. It is claimed by some that not only Alaska but the whole Pacific coast suffers from the unfortunate situation, for Washington, Oregon and California are now importing their coal supply from British Columbia, Australia and the Atlantic States, and paying for the best grades three times the average price in New York.

Most of the people in Alaska and the Pacific States lay the blame for present conditions upon the conservationists; while they in turn insist that it is the laws which are at fault and Congress which will take no action to change them.

In 1906 there were about 1,000 claims to Alaskan coal lands, based upon the law of 1904. Two years later President Roosevelt announced that the government would retain ownership of all coal to which claims had not been made, and that the legality of the existing claims would be determined as rapidly as possible. Of these 1,000, about 750 have now been reported adversely by the government, on the ground that the representatives of the claims have combined in violation of law. Many have been indicted for actual fraud, the commonest form being the use of dummy entries to secure a large number of claims in one block. The 250 odd claims which may yet be allowed have been held up pending further investigation. Many of these claimants have complied with the law as they

understood it; have paid for their lands; have invested everything in starting development and face bankruptcy if a decision is made against them.

One difficulty lies in the fact that the law has unduly limited the number of acres which might be worked together. An individual was permitted to claim, or make preliminary purchase of, 160 acres, and a company 640, but if there was any agreement or understanding that two or more of these claims were to be worked as a whole, they would become illegal and be disallowed by the government. Yet it is universally admitted to be impossible to mine the coal according to modern methods unless many of the claims are united. The act of 1906, the year in which President Roosevelt withdrew all government lands from further sale, provided that preliminary purchases, if made without any agreement to combine with others, might be consolidated, provided no single holding contained over 2,560 acres of contiguous land. During the past few years Congress has been repeatedly urged to legislate further for the situation, but has not done so. (See XII, *Alaska.*)

Secretary Fisher's Trip to Alaska.—To obtain as much light as possible upon actual conditions Secretary Fisher was sent to investigate the coal district in Alaska. Upon his return in September he reported that President Taft's action in releasing land on Controller Bay had not and could not create a monopoly, since there was plenty of other land on the same bay equally valuable for railroad purposes, and since there were other outlets for the Bering fields even more desirable than Controller Bay. He stated that the value of these coal deposits had been greatly exaggerated, and that he favored action which would give quick and adequate relief to Alaska. In an address before the American Mining Congress at Chicago, Oct. 28, Secretary Fisher said:

> The existing coal land laws applicable to Alaska neither promote development nor protect the public, and all its coal fields are withdrawn from entry. . . .
> The immediately important thing is that the Bering coal field should be open to wise development. . . . I believe the leasing system avoids the controversies and the difficulties of both extremes of public and of private ownership. It has been adopted with conspicuous success in the great mining communities of Australia and New Zealand. It is now the established law of the Yukon territory lying in Canada just across the border line from Alaska.

Secretary Fisher's plan — Government ownership of the coal lands with a system of strict leases to corporations—is strongly favored by President Taft, Mr. Pinchot, Col. Roosevelt, and the majority of the Ballinger investigating committee.

There is no doubt that Congress has neglected Alaska, just as it has neglected Guam and Tutuila, and that the neglect is due in large measure to the absence of any governmental body whose sole duty shall be to supervise the administration of these dependencies. A bill to create a Commission for Alaska, similar to the Panama Canal Commission, to take charge of the development of the country, was introduced at the special session by Senator La Follette.

The Conservation Congress.—The third annual session of the National Conservation Congress met at Kansas City, Sept. 25-27, with an attendance of over 1,000 delegates. The discussion centered on the conservation of the soil. Different speakers pointed out the necessity for scientific farming in place of the mere "soil-robbery" of the 19th century; and the need of making rural life more attractive for the women and children of the farms. President Taft, who was one of the speakers, outlined a plan by which the United States Government should coöperate with state and county authorities in placing a farm expert in every county, so far as possible, in order to investigate local soil conditions and advise the farmers as to the best possible methods of agriculture. (See also XXII, *Agriculture.*)

Public Lands Convention.—A few days after the adjournment of the National Conservation Congress there met at Denver a Public Lands Convention. Ex-Secretary Ballinger was one of the leading speakers and the chief spokesman of those who favored

state instead of federal control of public lands. He vigorously attacked the leasing plan which Secretary Fisher had outlined the week before at Kansas City; and declared that "no more gigantic political scheme has ever been attempted in the history of the Republic." In accord with Mr. Ballinger's views the convention, which was widely attended, passed a series of resolutions condemning the government's policy of retaining the ownership of the public lands and then leasing them. After these resolutions had been passed President Taft arrived to address the delegates; he explained and strongly defended the leasing policy and plainly told the convention that he believed they were wrong. In regard to the leasing of coal lands he said: "You want something done whereby the capitalist who invests his money may be assured of a fair return. You think the leasing system won't do that. I say it will."

Conservation of Forests.—After years of agitation Congress passed an act, Feb. 15, for the protection and preservation of the Appalachian and White Mountain forests. This act provides that any state or group of states may make arrangements with the Secretary of Agriculture for the protection of forests from fire, the states and the national government to divide the cost of maintaining fire control. It appropriates $1,000,000 for the next fiscal year, and not over $2,000,000 for each succeeding year until 1915, for the purchase, with the consent of the state concerned, of forests situated on the headwaters of navigable streams. A National Forest Reservation Commission is to determine which lands are to be purchased. Purchase must be authorized by the Commission upon recommendation of the Secretary of Agriculture, after a report by the Geological Survey "showing that the control of such lands will promote or protect the navigation of streams upon whose watershed they lie." After the lands have been secured they are to be maintained permanently as national reserves. Since the passage of the act the government has endeavored to purchase sufficient forest land in the White Mountains to protect the watershed. Considerable difficulty has been found in inducing the landowners, especially on the Southern slope, to sell their holdings; but the National Commission has final authority to enforce sales if it deems this necessary. The first purchase of land under this act comprises a section of 18,500 acres in McDowell County, N. C., the official authorization for which was announced Dec. 12. (See XXII, *Forestry*.)

The importance of the conservation of national timber resources has been emphasized by the report from the Bureau of Corporations giving the results of its four-years investigation into the condition of American forests. The report, made to the President in April, points out that while forty years ago the United States Government owned three-fourths of the timber supply, it now owns but one-fifth; that the control of the existing forests is being concentrated in a few enormous holdings which steadily tend to create a monopoly of the lumber industry; and that these timber resources are still being exhausted, the annual growth being only about one-third of the present annual cut.

The Supreme Court on Conservation.—The Supreme Court decided, May 1st, that the federal government might set aside large areas of its public lands as a national forest reserve, without obtaining the consent of the state affected, and that such reserve is not subject to the state fencing laws. The case arose from the acts of certain cattlemen in Colorado who pastured their herds on national forest-reserve land without making any effort to secure permits from the proper federal authorities. It was contended in their defence that a state law of Colorado provided that no damages done by animals could be recovered unless the land had been enclosed by a fence; and, furthermore, that the reservation of vast tracts in Colorado was unconstitutional, in that it was a denial of equality with the older states, which had been allowed to control all the territory within their boundaries. The decision is a striking victory for those citizens of the United States who believe in a strong national conservation policy.

TRUSTS AND CORPORATIONS

The trust problem during the past year has received much attention from both the Government and the public. Besides its unceasing discussion in the press and the continued prosecutions and investigations by the administration and by Congress, there have been a number of notable decisions by the Supreme Court and the Interstate Commerce Commission which have attempted to define with greater exactness both the obligations and the rights of great corporations. On the one hand, the railroads have been subjected to a more strict national supervision; on the other, it has been decided that not all business combinations are illegal. A solution of the trust problem, however, is not yet in sight.

Railroad Decisions.—During the early part of 1910 the railroads of the country announced a schedule of increased freight rates, which it was estimated would bring them an additional annual revenue of from $50,000,000 to $60,000,000. This new schedule, however, was suspended June 29, 1910, by the Interstate Commerce Commission pending an investigation. When this took place the representatives of the railroads claimed that the higher charge was necessary in order to meet the increase in the cost of supplies and labor; while Louis D. Brandeis, the chief counsel for the shippers who opposed the new schedule, pointed out that the railroads did not so much need additional revenue as they did a reduction in expenses, which could be brought about by scientific management. (See also XXXII, *Industrial Management.*) The Commission, Feb. 23, refused the request of the railroads and, with the exception of some concessions to the lines in the Southwest, ordered them to retain in force their existing rates. The decision said: "There is no evidence before us which establishes the necessity for higher rates. From the standpoint of net revenue and of dividends upon stock the railroads of the United States as a whole have never before prospered . . . as they did in 1910."

Other decisions, only less important, have restrained the transportation companies in rate making. March 24, the Interstate Commerce Commission decreed that no reductions in freight charges should be made for goods shipped for the use of railroads. July 24, it ordered a material lowering of rates from the East to points such as Reno and Spokane, which lie between Denver and the Pacific terminals of the great transcontinental lines. For some years the freight charges to these intermediate points have been about as much as they have been to the Pacific coast cities—Seattle or San Francisco—and then back again. This has been justified by the claim that the roads must make their through transcontinental rates especially low, in order to meet the competition of the cheap ocean schedules from the Atlantic to the Pacific. The Commission permitted the roads still to charge more for the relatively "short haul" from the East to the middle-western cities than for the "long haul" through to the coast, but decided that the existing rates were excessive.

These rate reductions, however, were later suspended by order of the Commerce Court which was created by act of June 18, 1910, to have jurisdiction over most matters passed upon by the Interstate Commerce Commission. The final decision in this case will be made by the Supreme Court.

A very significant ruling was given by the Commission in March against the Washington, Alexandria and Mt. Vernon Railroad. Although this company was earning but 2 per cent. on its capital stock, it was ordered to make a 33 per cent. reduction in fares, since these were deemed excessive as based upon the real value of the property. Should the principle of this decision be carried out, it would require a valuation of all railroads in the United States, and the levying of charges based upon this valuation rather than upon capital stock.

The Minnesota rate cases, decided by Judge Sanborn in the United

States Circuit Court at St. Paul, April 8, limited the power of the individual states over the lines within their respective boundaries, by subordinating it to the authority of the Interstate Commerce Commission. The decision annulled reductions which the Minnesota Railway Commission had ordered, on the ground that, although these applied only within the state, they yet affected unjustly the commerce between the states, which was under the jurisdiction of the Interstate Commerce Commission.

The Supreme Court handed down a unanimous decision, Oct. 30, which still further extended the power of the federal government within the several states. The point at issue was whether the federal safety-appliance act applied to cars carrying shipments of goods from one point to another within the same state. The court decided that the law did so apply, provided the railroad carried on interstate business; and that the cars and equipment were entirely under the jurisdiction of the Interstate Commerce Commission. This decision, in the words of Commissioner F. K. Lane, "means, eventually, that there is to be no dual control of interstate carriers."

The Interstate Commerce Commission in a decision given Dec. 7, in the "Car-shortage Case," asserted jurisdiction over the rules regulating the interchange of freight cars on interstate lines, and held that it had authority to enforce "the right of the shipper to safe and speedy transportation of his freight." (See also VII, *Law and Jurisprudence;* and XXV, *Railroads.*)

Protest of the Governors.—When the Governors of the several states met Sept. 12-15, at Spring Lake, N. J., for their third annual conference, their chief subject of discussion was the control of the railroads. There was a general feeling that the decision of Judge Sanborn was an encroachment upon the rights of the states; and by a vote of 24 to 1 they appointed a committee of 3 of their number—Governors Harmon of Ohio, Hadley of Missouri, and Aldrich of Nebraska—to represent them in the Minnesota rate case, which had been appealed to the Supreme Court, and to file briefs against Judge Sanborn's decision.

This unprecedented proceeding has aroused widespread discussion, and has received nearly an equal measure of praise and of condemnation. It is admitted by all, however, that there should be some authority empowered to regulate railroad matters within the several states, and that there must be no "twilight zone" between the nation and the state which neither can control. One fundamental question is whether in railroad regulations federal or state authority shall be paramount.

Railroad Securities Commission Report.—When the Mann-Elkins act of June 18, 1910, was under discussion in Congress, the House added an amendment placing all future issues of railroad stocks and bonds under the supervision and control of the Interstate Commerce Commission. Upon objection by the Senate, it was agreed that the amendment should be dropped, but that the President should appoint a commission to study the subject. Sept. 5, 1910, President A. T. Hadley of Yale, was selected as chairman of a board of five railroad experts. This commission reported, Dec. 11, 1911, that the proposed Federal regulation of the issue of new securities was undesirable so long as the several states exercised the same right; but recommended that a Federal incorporation act should be passed, permitting railroad companies to exchange their state charters for ones which would place them exclusively under Federal control. The commission stated further that full publicity for all railroad financing, enforced by laws, was the best security against such an evil as stock-watering; but that it would be unwise to limit the dividend rates, or base freight schedules solely upon a physical valuation of railroad property, or make outstanding securities conform to any arbitrary standard, or absolutely forbid companies to own stock in other roads. In summary, the commission favored the future extension of Federal control, but strongly opposed most of the popular proposals for the radical limitation of the powers and the privileges of the railroad companies.

Trust Decisions.—The most important decision ever given in the United States in regard to trusts and combinations was rendered by the Supreme Court May 15 in the Standard Oil case. This company, in the judgment of the lower courts, had violated the Sherman anti-trust act of 1890, which provided that "every contract, combination in the form of trust or otherwise, or conspiracy in restraint of trade or commerce among the several states, or with foreign nations, is . . . illegal." The Supreme Court laid down the general rule, with the single dissenting opinion of Justice Harlan, that combinations which restrain trade in some degree are not necessarily illegal, but only those which "unduly restrain" it, which are actually monopolistic, whose "direct and necessary effect" is to stifle competition; and that in deciding whether a combination is illegal the Court must follow "the standard of reason." Applying this principle to the Standard Oil Co., the Court decided unanimously that it was an illegal combination, and granted it six months in which to dissolve into its constituent companies. Two weeks later the same Court unanimously decided that the Tobacco trust was also illegal, and directed the United States Circuit Court of New York to assist it in arranging some plan "recreating out of the elements now composing it a new condition which shall be honestly in harmony with and not repugnant to the law." (See also VII, *Law and Jurisprudence;* and XIII, *Government Control of Corporations.*)

These decisions were generally acceptable to the business world at the time they were rendered, for they seemed to throw some light upon what corporations might and what they might not do. Business confidence was further strengthened when, shortly afterwards, June 23, the United States Circuit Court in Utah applied the principles thus laid down, by deciding that the Union Pacific Railroad Company had not violated the anti-trust act by acquiring control of the Southern Pacific road, since these two systems were not really competitors at the time of the merger.

The Standard Oil trust, in accord with the decree of the Supreme Court, was legally dissolved Sept. 1. The Standard Oil Co. of New Jersey, the parent organization, which controlled the oil industry of the country through its ownership of practically the entire capital stock of 33 other corporations, relinquished its control over them by giving to each of its own stockholders, Dec. 1, his proportionate share in the stock of each of these 33 minor companies. Since the same small group of men which dominated the trust now controls each of these independent companies, vigorous competition is hardly to be expected in the immediate future.

The organization of the Tobacco trust was such a complicated one that the attempt to break it up into its constitutent elements was, in the words of J. P. Morgan, like trying to "unscramble eggs." The officers of the American Tobacco Co. finally laid before the Circuit Court for its approval a complicated plan by which four distinct companies would be formed from the Trust, "no one of which will have a controlling influence in the tobacco business." "None of the four companies," the officers stated, "will have any interest in or relation to the other, although at the outset they will of necessity have many stockholders in common." This plan was strongly opposed by the independent tobacco manufacturers on the ground that the same few men who controlled the Trust would dominate the proposed four companies. The Circuit Court took the plan under advisement Oct. 31, and approved it Nov. 8, with the proviso that, for a period of three years, the leaders of the former trust must not increase their holdings of stock in any of the newly-created companies. Dec. 11, the Supreme Court refused to interfere with this reorganization plan.

The government has also won important victories against the trusts in the United States Circuit Courts. At Baltimore, Oct. 13, the Court decided that the Standard Sanitary Manufacturing Co. and others, commonly known as the bathtub trust, formed a combination in violation of the Sherman anti-trust law and ordered its dissolution. The same

month the Court at Toledo forbade the continuance of the electric lamp trust, which had been formed by the General Electric Company and 35 other concerns. The defendants agreed to carry out the Court decree. In these cases the trusts were not highly organized corporations, but merely illegal combinations made by independent companies. The government secured a decree of dissolution against the du Pont powder trust from the Circuit Court June 21; heavy fines against the leaders of the wire trust; and a decision against the Southern Grocers' Association, Oct. 17.

Congressional Investigations.—During the Special Session, April to August, Congress instituted a series of investigations of the great trade combinations, especially of the steel trust. The leaders of the United States Steel Corporation gave much information in regard to its organization and its immense profits, but claimed that it controlled only a little more than one-half of the steel output of the United States, and that this was a less proportion of the total than it controlled ten years before. An interesting incident of this investigation was the voluntary appearance of Ex-President Roosevelt, who explained the circumstances under which he promised the leaders of the Steel Corporation, at the height of the panic of 1907, that the government would not prosecute them if they bought control of the Tennessee Iron and Coal Co. He declared that his action stopped the progress of the panic and that the result justified his judgment. The report of the investigations will be made to Congress probably in the early weeks of 1912.

Government Prosecutions.—After the Supreme Court had decided the Standard Oil and tobacco trust cases, the business world gathered the idea that, although a few more of the combinations notoriously monopolistic would be prosecuted, the great majority of the large corporations would be undisturbed. But the number of trust prosecutions increased; 15 new cases were started. Civil suits, some of them already pending, were pushed for the dissolution of the beef, towage, turpentine, shipping, kindling-wood, publishers, anthracite coal, harvester, lumber, and shoe-machinery trusts; and criminal indictments were brought against the responsible heads of the wall paper, lumber, wire, and shoe-machinery trusts.

Attorney-General Wickersham was quoted in September as saying that in addition to the combinations against which he had already begun proceedings, there were 100 other concerns which were violating the anti-trust law. This view would make nearly all of the leading corporations in the United States liable to government action. At the same time President Taft in his Western speeches made the anti-trust law a leading issue, and insisted that the prosecutions for its violation must go on.

These facts undermined business confidence, with the result that there was a decline in security values the last week in September which in its intensity approached a panic. The principal loss was suffered by United States Steel. Nearly a month later, Oct. 26, the government filed a suit in the United States Circuit Court at Trenton, N. J., against the United States Steel Corporation and 18 individuals, including J. Pierpont Morgan, John D. Rockefeller and Andrew Carnegie. This suit is one of the most sweeping anti-trust actions ever brought by the government, since it seeks the dissolution not only of the Steel Corporation, but of its constituent companies as well. A short time before the suit was filed the directors of the Steel Corporation formally announced that they would cancel the lease of the Great Northern ore lands, which, it had been claimed, gave them the control of an undue proportion of the iron ore in the country, and would reduce the freight rates on all the ore railroads which they owned in the Great Lakes region.

This prosecution is by far the most important yet started under the anti-trust law, for the Steel Corporation represents a greater amount of capital than either the Standard Oil or the tobacco trusts; its securities have been more largely bought by men and women of relatively small means; and it is admitted to have been free from the worst features which were proven against the other great trusts.

The recent activity of the Department of Justice, while gratifying to a large proportion of the people of the country, has stirred up discussion and criticism from many leaders of public opinion who disbelieve in this method of controlling business; and has caused resentment among the leading business men, whose point of view was, expressed by the New York *Sun*, when it said: "There can be no substantial or continuing prosperity as long as the normal operations of business are conducted under the threat of grand-jury proceedings and the shadow of the penitentiary."

President Taft's Views.—During his Western trip President Taft spoke frequently on the subject of the trusts. In regard to the Sherman anti-trust law he said:

> It has required 20 years of litigation to make this statute clear. But now it is clear . . . it is really accomplishing the purpose of its framers and is enforcing reform in the business methods of this country. . . . Under these conditions I am entirely opposed to an amendment to the anti-trust law. . . . We did get along with competition; we can get along with it. We did get along without monopoly; we can get along without it; and the business men of this country must square themselves to that necessity. Either that, or we must proceed to state socialism and vest the government with power to run every business.

The President's message to Congress, Dec. 5, was devoted almost entirely to a discussion of the trust problem. After defending the Sherman act and the Supreme Court decisions, he recommended the passage of a law which should "describe and denounce methods of competition which are unfair," in order to "point out more in detail to the business community what must be avoided." He also favored the plan of permitting the companies which do an interstate business to be incorporated under the laws of the United States, which would subject them to the supervision of an executive bureau of the Department of Commerce and Labor.

Roosevelt's Attitude.—National attention was attracted by Col. Roosevelt's editorial in the *Outlook*, Nov. 18, entitled "The Trusts, the People and the Square Deal." He definitely opposed the President's policy, as expressed at that time, by stating that the Sherman anti-trust law was inadequate to meet modern business conditions; that the government's policy in the United States Steel prosecutions was not justified; that to restore old-time competition was impossible and "just as foolish as if we should go back to the flint-locks of Washington's continentals"; and that to attempt to regulate trusts by a succession of lawsuits was hopeless. The solution of the problem presented by Mr. Roosevelt was governmental control and supervision—but more thoroughgoing than that suggested by President Taft—which should be exercised by some commission, similar to the Interstate Commerce Commission, which in extreme cases should even regulate trust prices.

Government Control of Trusts.—One of the significant tendencies of the year has been a growing belief that the government should control and regulate the great combinations, not merely try to destroy them. During the investigation into the Steel Corporation, Judge Gary, its president, said: "I do not think that the Sherman act . . . will . . . prevent these combinations. . . . Speaking for the United States Steel Corporation . . . I wish that we could go to some responsible governmental source and say, 'Here are our facts, here is our business, here is our property and cost of production,' and could be told just what prices we could charge and just what we could do." This belief in some form of governmental supervision has also been expressed by such business leaders as Carnegie and George W. Perkins, and is probably held by a majority of the men at the head of the great corporations.

Attorney-General Wickersham, in an address at Duluth, July 19, said that as prices are no longer determined by demand and supply, the public can protect itself only by a regulation by some government commission, which shall pass upon the fairness of the prices charged by the great industrial corporations just as the Interstate Commerce Commis-

sion passes upon the fairness of the railroad rates. This idea was embodied in a bill introduced during the special session by Congressman Newlands, which proposes to create an Interstate Trade Commission; it has already received the endorsement of the United States Commissioner of the Bureau of Corporations.

The Interstate Commerce Committee of the Senate began a series of hearings, Nov. 15, upon the Sherman anti-trust law and the possibility of inaugurating some form of governmental supervision and regulation of large corporations.

Corporation Tax.—The right of the government to scrutinize the operations, the assets and the earnings of the corporations of the country was unanimously affirmed by the United States Supreme Court, March 13, in its decision upholding the constitutionality of the corporation tax. This was part of the Payne-Aldrich act of 1909, and provided for the levying of a tax of 1 per cent. upon the net income of all corporations doing business in the United States. (See YEAR BOOK, 1910, pp. 325-327, VII, *Law and Jurisprudence*, and XIV, *Public Finance.*)

POLITICAL CORRUPTION

The fight against graft and corruption in public life has been energetically carried on during the past year. The revelations of dishonesty and venality in city and state have been disheartening, but they are not altogether new; from the early "days of the fathers" to the present there has been a certain amount of politi cal corruption even of the crudest kind, such as the buying of votes and the bribing of officials. One of the colonial governors of New York shortly before 1700 was continually bribed to sanction illegal land grants; and the leading Assemblymen of the colony were themselves involved in the transactions. The selling of votes was so common in old Rhode Island, that a law was passed in 1746 compelling every voter in the colony, before exercising the franchise, to take a solemn oath that he had not been bribed. During the past century many instances of a more or less similar character have been recorded.

Adams County, Ohio.—The worst instance, however, of political venality ever known to exist in an American electorate, is that recently proven against the citizens of Adams County, Ohio. This is a typically rural county, of old American stock, situated in the southern part of the state. The selling of votes, which had been going on here for about 30 years, had come to be an open practice until it was brought to an end the past year by Judge A. Z. Blair of the County Court. He induced a number of the bribe-givers, under promise of immunity, to furnish him lists of those whose votes they had bought. When it became known that the Judge had these names, the great majority of the guilty persons confessed, and were fined and disfranchised for five years. Among those who sold their votes were well-to-do farmers and even ministers of the Gospel. Altogether, 26 per cent. of the total electorate, nearly 1,700 out of 6,500, either confessed or were convicted.

Judge Blair has described his fight to put an end to this traffic in votes in the November issue of *McClure's Magazine*. The number of voters disfranchised, he says, does not begin to show the extent of the political corruption; for a careful investigation of a typical precinct proved "that 85 per cent. of all the electors who cast their votes at the election last fall had at some time in their life been engaged in either buying or selling votes." This corruption went on with full knowlelge of the most prominent political leaders in the state, who "contributed largely to the funds used for buying votes in Adams County, with full understanding of how money was used in the county." A number of attempts were made by the better class of citizens to stop the practice, but the vote sellers insisted upon receiving their usual election-day pay. The saddest feature of the whole case is the fact that Adams County seems to be typical of many rural sections throughout the United States. Judge Blair

says: "I do know that conditions very similar prevail in most of the counties in the southern part of Ohio, and in the counties of Kentucky across the river from them. Since our investigation I have received scores of letters from other parts of the United States, stating that votes are sold and bought at wholesale in the writers' own community."

Vermilion County, Ill.—It is stated by the press that a considerable proportion of the citizens of Vermilion County, Illinois, have undoubtedly been guilty of vote selling; but the Grand Jury seemed unable or unwilling to obtain the evidence necessary to bring any large number of indictments.

The Ohio Legislature.—In the early part of the year, corruption in the Ohio legislature became so notorious that a committee of citizens retained Detective W. J. Burns to investigate the situation. His men, by pretending to be lobbyists and offering money for the passage or defeat of various bills, secured evidence, they claimed, that some ten Senators and 30 Assemblymen had been engaged in corrupt practices. Nineteen indictments have already been returned against members and employees of the legislature, among whom are the Chairman of the Senate Judiciary Committee, five members of the Senate Finance Committee and the Sergeant-at-Arms of the Senate. One of the representatives has already confessed in court that he had sold his vote; and the Sergeant-at-Arms has been convicted, July 3, of aiding and abetting bribery, although the case is now pending on appeal to a higher court. Other trials are still to take place. A state act has now been passed making the penalty for selling legislation a term of imprisonment in the penitentiary.

The Illinois Legislature.—In Illinois an investigation by a committee of the state Senate has brought forth additional evidence of the political corruption which existed in the legislature in 1909 at the time when Senator Lorimer was elected to the United States Senate.

The Lorimer Case.—The most notable fight of the year for purity in politics has been carried on by those who have tried to deprive William Lorimer, of Illinois, of his seat in the United States Senate. Lorimer, a Republican, was elected May 26, 1909, by the Illinois legislature, by a majority of 14, receiving 55 Republican and 53 Democratic votes. Rumors arose at once that the election had been secured by corruption, and soon four members of the legislature confessed that they had been bribed. After Lorimer took his seat in the Senate, charges brought against him were referred to the Committee on Privileges and Elections, which reported in favor of his right to retain his seat. The report was based upon two grounds: (1) that no evidence proved that Senator Lorimer either participated in, sanctioned or encouraged bribery in connection with his election; and (2) that, so far as definitely known, only four votes were corrupt, which was not enough to affect the majority of 14 by which the election had been secured. This report was upheld by the Senate, March 1, 46 to 40. After the adjournment of Congress, upon his return to Chicago, Senator Lorimer was given a great and enthusiastic reception by his friends and supporters. On the other hand, resolutions of protest against the action of the Senate, were passed in many parts of the United States; the assembly of California resolved "that in seating William Lorimer as a member of the United States Senate, this nation has been humiliated."

When the 62nd Congress met in special session, April 4, Senator La Follette secured a second investigation on the ground that new evidence had been secured. The Committee on Privileges and Elections referred the case to a subcommittee of 8, equally divided between those favorable and unfavorable to Senator Lorimer. At the end of Dec., 1911, the committee had not yet reported.

Senator Stephenson.—Aug. 12, the United States Senate, upon petition from the Wisconsin legislature, ordered the Committee on Privileges and Elections to investigate the alleged corrupt methods by which Senator Isaac Stephenson obtained his election for the term beginning March 4, 1909. Senator Stephenson,

a multi-millionaire, 82 years old, admits upon his own sworn statement made at the time according to law, that he spent $107,793 in the primary election in Wisconsin, to secure popular endorsement as the Republican candidate for the Senate. In the course of his testimony before the Senate investigating committee, which held its sessions at Milwaukee during the past fall, he stated that, notwithstanding the large sum of money expended, he believed it was all used legitimately; that he cautioned his managers "not to violate the law in any particular," and that so far as he knew they had obeyed him. The report of the Committee, which is stated unofficially to be favorable to Senator Stephenson, had not yet been given to the Senate at the close of the year.

The Campaign Publicity Act.—Since the sensational charges of improper political contributions by the great corporations in the election of 1904, efforts have been made to enforce the publication of all campaign receipts and expenses. A large proportion of the states have now enacted legislation of this kind, but the first step by Congress to supervise election expenditures, was the act of Jan. 26, 1907, which made it illegal for any corporation to make a money contribution in connection with any election for President or Congressman, or with any election by any state legislature for a United States Senator. The act of June 24, 1910, required the publication after election of all contributions made to Congressional campaign funds. Finally a most stringent act was passed by the recent special session, and went into effect Aug. 19. It required the publication, before as well as after elections, of all receipts and expenditures, with names and amounts, by all candidates for Congress and for the United States Senate, and by all political committees; it applies to primary and general elections, nominating conventions, and elections by legislatures. It limits a candidate for Congress to a total expenditure of $5,000 and a candidate for the Senate to $10,000. Candidates must also make public all campaign pledges or promises. Failure to comply with the law carries a penalty of a fine not exceeding $1,000 or imprisonment for not more than one year, or both. (See VIII, *Popular Government and Current Politics.*)

AMERICAN DIPLOMACY

During 1911 the State Department made a number of treaties and agreements of more than usual importance. The treaties of unlimited arbitration negotiated with Great Britain and France marked a great advance in the progress toward permanent international peace, and gave the United States the moral leadership in this world movement. President Taft submitted them to the Senate during the special session, but they were not acted upon before adjournment. (See V, *International Relations.*)

The Japanese Treaty.—A new treaty with Japan was signed Feb. 21, 1911. It took the place of the one made in 1894 which by its terms was to continue in force until 1912. In order to accommodate the Japanese government, which had commercial conventions with other nations coming to an end in 1911, and which planned to make immediate changes in its commercial laws which the continuance of the American treaty would prevent, President Taft generously and diplomatically agreed to negotiate a new treaty a year before the old one expired. The important difference between the two lies in the treatment of immigration; the old gave the United States government the definitely stated right to exclude Japanese from the country, one section reading: "It is however understood that the stipulations . . . do not in any way affect the laws, ordinances and regulations with regard to trade, *the immigration of laborers*, police and public security, which are in force or which *may hereafter be enacted* in either of the two countries." Since the Japanese have felt that this sentence carried

with it an implication of inferiority, the new treaty made no mention of immigration; in a written declaration, however, signed by the Japanese Ambassador at the same time as the treaty, it was stated "that the Imperial Japanese government is fully prepared to maintain with equal effectiveness the limitation and control which they have for the past three years exercised in regulation of the emigration of laborers to the United States." In other words, Japan has agreed that it will itself prevent its laborers from coming to this country. The treaty, which was unanimously ratified by the Senate within five days after its submission, has created a most favorable impression in Japan.

The Chinese Loans.—In 1911 the State Department won two long-drawn diplomatic contests and secured for American financial interests a share in large loans to China, one for $50,000,000, for the reform of Chinese currency and the development of Manchuria, and the other for $30,000,000 for railroad construction. (See also V, *International Relations*, and VI, *China*.)

The Hukuang railroad loan was negotiated in 1909 by Great Britain, France and Germany; but in June of that year President Taft strongly urged China to permit American bankers to join those of the other countries. This was finally agreed to, and the Imperial authorization for the contract was given May 9, 1911. The advantages to the United States of participating in the loan are in part financial and commercial, and in part political. By the terms of the agreement the American group, J. P. Morgan & Co., Kuhn, Loeb & Co., The First National Bank of New York and the National City Bank of New York, are given the privilege of taking one-fourth of the bonds to be issued, and an American civil engineer is to have charge of the construction of one-fourth of the new lines. Since the bonds are given an Imperial guarantee and are secured by the internal revenues of the country, the United States has secured the right, equally with the three other nations, of passing upon all matters which affect the resources of China, and can thus with greater effect urge necessary financial reforms and oppose the exclusive privileges urged by the great military powers.

The currency loan was negotiated in the fall of 1910 by the four American banking companies as a purely American agreement, but the British, French and German interests were later admitted to equal shares in the awarding of the bonds. The contract was finally signed in Pekin April 15. Its great political importance lies in the fact that part of the loan is to be expended in Manchuria, "for the promotion and extension of industrial enterprises," and that the bonds are largely secured by the Chinese duties and taxes from Manchuria. The four nations, then, including the United States, have acquired a legal interest in Manchuria, which will stand in the way of the monopolization or absorption of the province by Russia or Japan.

Honduras and Nicaragua.—The Governments of Honduras and Nicaragua have for some years been unable to pay the interest charges on their large foreign debts, a condition which has brought with it the possibility of intervention by European nations in the interest of their bondholders. These two countries moreover have been in an almost continual state of civil war, due in large part to the desire of different factions to obtain possession of the receipts of the custom houses. This situation induced Secretary Knox to agree by treaty with Honduras, Jan. 10, and with Nicaragua, June 6, that the United States government should, in a measure, supervise the administration of their customs and the appointing of Americans as Receivers-General to have full charge of all custom receipts. This would assure sufficient financial stability to induce American syndicates to loan money to refund the debt, reëstablish the credit, and aid in the development of the resources of these two countries. These agreements are substantially the same as the one made with the Dominican Republic in 1907, which is still in force. Under American management of Dominican customs, receipts have almost doubled, the national debt is being

paid, revolutions have ceased, and the country has begun to prosper. President Taft urged the ratification of the treaties with Honduras and Nicaragua because they would prevent foreign interference in Central America, and put a stop to revolutions; "a strong Honduras," he said, "would tend immensely to the progress and prosperity of Central America." The treaties were not acted upon by the United States Senate before the adjournment of the special session, and were still pending at the close of the year. (See also V, *International Relations.*)

Dollar Diplomacy.—The active negotiations of the United States government to secure for its citizens such loans as these to China, Honduras and Nicaragua have given rise to the expression "dollar diplomacy." As defined by the State Department this "means using the capital of the country in the foreign field in a manner calculated to enhance fixed national policies. It means the substitution of dollars for bullets. . . . It recognizes that financial soundness is a potent factor in political stability." Dollar diplomacy, in its best sense, aims to accomplish the purposes of the government in foreign affairs by financial rather than military means; but it also, in President Taft's words, "may be well made to include active intervention to secure for our merchandise and our capitalists opportunity for profitable investment, which shall inure to the benefit of both countries concerned."

A recent example of this latter kind of dollar diplomacy was the successful effort of the State Department to secure for American shipbuilding firms a 22-million dollar contract for the construction of two battleships for the Argentine government. It has also been largely instrumental in obtaining from Argentine for American firms, a two-million dollar order for railroad material, a million-dollar contract for powder, a million-dollar contract for naval guns, and a large order for stamps. The water system of the far-away city of Muscat, the capital of Oman, was built by Americans who obtained from the United States government early information of the plans of the Sultan.

The Bureau of Manufacturers of the Department of Commerce and Labor works in close coöperation with the Department of State in assisting American firms to secure foreign trade. The Bureau was created by Congress in 1903, in order to "foster, promote and develop the various manufacturing industries of the United States and make markets for the same at home and abroad." The Bureau has a force of ten commercial agents, each an expert in his line, who supplement the work of the regular consuls by investigating the trade possibilities in the different countries of the world. The information thus gained is used to assist American manufacturers in securing a larger share of the foreign market.

Dollar diplomacy has been severely criticised during the past year. It is felt by many that while it is the business of the consuls and the bureau of manufactures to work for the development of our exports, it is unworthy of the American people that their ministers and ambassadors to other countries should be primarily drummers of international trade. Senator La Follette attacked dollar diplomacy in the United States Senate on the ground that it was making the Department of State merely the commercial agent of the great financial interests. An illustration of the unfortunate results of this new diplomacy is widely believed to be seen in the enforced retirement of Dr. David J. Hill, Ambassador to Germany. While the cause of his resignation is not definitely known, there has been a general suspicion that this scholarly and efficient representative of the highest ideals of the American foreign service has been sacrificed in the interest of dollar diplomacy.

Liberia.—During the past year the United States has continued to extend its protection and assistance to our semi-protectorate of Liberia. By agreement with the native government, Reed P. Clark, of New Hampshire, has been appointed Customs Receiver-General and Financial Adviser of the country. He is to be

aided by three assistant receivers nominated by Great Britain, France and Germany, and commissioned by the President of Liberia. This board of four is to administer the native customs, build up an adequate customs guard and patrol service, and assist in the financial reorganization of the country. The assurance which this gives that there will be an efficient collection of the native revenue has induced bankers of the four interested powers to float a loan for Liberia of about $2,000,000, which will enable the Republic to refund its debt and place its finances on a sound basis. The Liberians, however, would be much better satisfied were there none but Americans on the board. Three years ago Liberia was on the point of being divided between Great Britain and France; to-day, thanks to the protection of the United States, its continued independence seems to be well assured.

The Seal Treaty.—A treaty between the United States, Great Britain, Japan and Russia for the protection of fur seals and sea otters was signed July 7, and ratified by the Senate July 24. The treaty prohibits sealing on the high seas, and arranges for an apportionment among the signatory powers of the annual proceeds from the seals killed in the various herds on land. The agreement is to be binding for 15 years. As the rapid destruction of the seals, which has been going on for several years, has been due almost entirely to their capture while away from land, it is believed that this treaty will preserve the small herds now in existence and will enable them to increase in numbers in the future. (See XXII, *Fisheries.*)

The Russian Treaty.—For several years the Russian Government has refused to allow American Jews, and American missionaries and ministers of various denominations the privilege of unrestricted travel in Russia, although they might have passports proving their American citizenship. This discrimination was said to be in violation of a treaty between the United States and Russia, made in 1832, which provides that the inhabitants of each country shall be permitted to enter the territory of the other; "they shall be permitted to sojourn and reside in all parts whatever of said territory . . . and shall enjoy . . . the same security and protection as natives of the country wherein they reside, on condition of their submitting to the laws and ordinances there prevailing and particularly to the regulations in force concerning commerce." (See also XXXIII, *Judaism.*)

The Russian Government, however, maintained that since it did not permit Russian Jews to have the privilege of unrestricted travel, it could be under no obligation to give to foreigners a permission which it denied to its own citizens.

Plans for a nation-wide agitation to induce Congress to abrogate this treaty were formed in October by the National Citizens Committee of New York, of which Wm. G. McAdoo was chairman, and received strong and general support. The first of a series of mass meetings to protest against Russia's attitude was held at Carnegie Hall Dec. 6. It was addressed by a distinguished body of speakers who insisted that if Russia would not grant equal rights to all American citizens, the United States must repudiate the existing treaty.

President Taft stated in a message to Congress, Dec. 7, that negotiations had begun with the Russian government, looking to a diplomatic adjustment of the controversy, and that he would send a further communication to Congress on the subject soon after the beginning of the new year. Notwithstanding this, the House of Representatives, Dec. 13, by a vote of 300 to 1, passed the Sulzer resolution, which read, in part:

> Resolved, That the people of the United States assert as a fundamental principle that the rights of its citizens shall not be impaired at home or abroad because of race or religion; . . . that the Government of Russia has violated the treaty . . . refusing to honor American passports duly issued to American citizens on account of race and religion; that for the aforesaid reasons the said treaty is hereby declared to be terminated and of no further force and effect from the expiration of one year after the date of notification.

Before the Senate voted upon this resolution, the President took the matter into his own hands and, Dec. 17, gave to the Russian government, through Ambassador Guild, a notification—a year in advance as provided for in the original agreement—that, Jan. 1, 1913, the treaty would cease to be binding.

The Senate, believing that the Sulzer resolution was needlessly and dangerously harsh in charging bad faith against Russia, passed, Dec. 19, a more carefully worded resolution, by a vote of 72 to 0, which ratified the President's action on the ground that "said treaty is no longer responsive in various respects to the political principles and commercial needs of the two countries, and that the constructions placed thereon by the contracting parties differ upon matters of fundamental importance and interest to each." This resolution was also passed by the House Dec. 20, and signed by the President Dec. 21. (See also V, *International Relations.*)

THE PROGRESSIVES

The Progressive movement exists in both the Republican and Democratic parties. It aims to bring city, state and national governments more completely under the immediate control of the people, by such means as direct primaries, the initiative, referendum and recall; and to protect government and society from the great financial interests by stringent corrupt-practice acts and laws subjecting the corporations to the strict regulation of the State. The Democrats have had a party fight in New Jersey between the Progressives, led by Governor Woodrow Wilson, and the Regulars, who controlled the machine. (See VIII, *Popular Government and Current Politics.*)

But it is only among the Republicans that the movement has led to a national party break. The division began in 1909 when a number of Republican Congressmen united to vote against the Payne-Aldrich tariff bill. They also opposed Speaker Cannon; this led to the dramatic scene in the House of Representatives, March 15, 1910, when some 40 Republicans joined with the Democrats to overrule the Speaker and destroy his control of the House. It was these same men who led the attack on Secretary Ballinger.

The National Progressive Republican League.—The party break has grown wider during 1911 and for the first time the Progressives have formed a definite organization. Jan. 23, the National Progressive Republican League was started at Washington for the "promotion of popular government and progressive legislation." The League declares that "popular government in America has been thwarted, and progressive legislation strangled by the special interests," which, by their control of the machinery of government, "dictate nominations and platforms, elect administrations, legislatures, representatives in Congress, and United States Senators, and control Cabinet officers." The following five specific reforms are therefore advocated: (1) election of United States Senators by direct vote of the people; (2) direct primaries for the nomination of all elective officials; (3) direct election of delegates to national conventions, with opportunity for the voter to express his choice for President and Vice-President; (4) amendments to state constitutions providing for the initiative, referendum and recall; and (5) a thoroughgoing corrupt-practices act.

Senator Jonathan Bourne, Jr., of Oregon, was elected President of the League. Among its members are 8 Senators—La Follette of Wisconsin, Cummins of Iowa, Bristow of Kansas, Bourne of Oregon, Brown of Nebraska, Clapp of Minnesota, Dixon of Montana, and Gronna of North Dakota; 16 members of the House of Representatives; the governors of six states—California, Kansas, Michigan, Nebraska, Wisconsin and Wyoming; and a number of other well known men, among whom are Gifford Pinchot, James R. Garfield, Ex-Senator Beveridge, Charles R. Crane and

Louis D. Brandeis. It was stated that Col. Roosevelt was in full sympathy with the League, but did not sign its declaration of principles from the fear that if he did so the movement would be regarded as a third-term propaganda in his interest.

The League was looked upon by many as an organization directed against President Taft and his administration; but this was denied by its founders, who declared that they had no purpose of "promoting the political fortunes of any man or men" and that the League was "not intended as an expression of opposition to President Taft in any sense."

Senate Appointments.—The political importance of the new movement was strikingly shown in the United States Senate, April 22, when the Progressives demanded that they should be represented in the Republican membership of the Senate Committees in the ratio of 1 to 4, and that their assignments should be made by the four of their group who were on the Republican steering committee, La Follette, Bourne, Cummins, and Bristow. Senator La Follette in making the motion to this effect named as the Progressives, Senators Clapp, La Follette, Bourne, Borah, Brown, Dixon, Cummins, Bristow, Crawford, Gronna, Poindexter and Works; and declared that the division between them and the Regular Republicans "is recognized in the Senate and throughout the country as based upon clearly defined differences on important legislative measures and questions of great public interest." These demands were refused by the Regular Republicans; they gave the Progressives their full proportionate share of appointments, but insisted that these should be made by the caucus of all Republican members, and that the Progressives should not be recognized as an organization distinct from the Republican majority of the Senate

The Special Session.—The full significance of this split was realized during the Special Session, April to August, when the Progressives acted virtually as a third party, and for a time, by an alliance with the Democrats, practically controlled Congress. As a group they vigorously opposed the first great measure of the session, Canadian reciprocity, although this was proposed and its passage urged by a Republican President.

The three Democratic measures, the farmers' free-list, the wool and the cotton bills received from 23 to 30 Progressive Republican votes in the House of Representatives. In the Senate the first two bills were passed in amended form by a coalition of the Progressives and the Democrats. This Senate alliance was broken during the consideration of the cotton bill, for a majority of the Regular Republicans, incensed at the previous action of the Progressives, left the Senate Chamber and allowed the Democrats to perfect the measure without regard to the wishes of their former allies. When, however, the President vetoed the three tariff measures, more than two-thirds of the Progressives in the House of Representatives joined the Democrats in their unsuccessful attempt to pass the farmers' free-list and the wool bills over the veto.

The Progressives and the President.—The opposition to President Taft which had been growing among many of the Progressives found vigorous expression in a speech upon the reciprocity bill by Senator La Follette in the Senate, July 13. After denouncing the Canadian agreement as violating "every tariff principle and every party promise upon which William H. Taft was elected President," he attacked the President's whole administration, declaring that he had deserted the Roosevelt policies, especially that of conservation; had placed in his Cabinet men devoted to the great corporations; had surrendered to the financial interests in Alaska; and had supported the indefensible Payne-Aldrich tariff.

President Taft, in turn, brought charges against the Progressives in a speech which he gave in Hamilton, Mass., Aug. 25. He said that previously "Mr. La Follette and his associates" as well as the Democrats, had "earnestly deprecated any future revision (of the wool schedules) without an accurate knowledge of

the facts. But now . . . in the desire to play politics and gratify what was supposed to be a popular desire for the reduction of duties, they did not hesitate to adopt all the defective methods of previous tariff revision, which they had denounced. . . . No tariff bill within any one's recollection has ever been passed with so little care. . . . The other two revenue measures were really impromptu. . . . They were plainly measures made . . . with the hope that by the veto which they had every reason to expect, they might invite popular hostility toward the Executive. . . . Never in the history of the government, I venture to say, have important public interests been dealt with in such a light-hearted way, with such absolute ignorance of the effect of legislation and with such willingness to sacrifice business interests to political exigencies as in the present legislation."

By the end of the Special Session the leading Progressives had come out openly against President Taft's administration and against his renomination. Senator Cummins of Iowa issued a signed statement September 5, in which he said: "My general conclusion is . . . that in every struggle which has taken place since Mr. Taft became President, upon vital things his allies and supporters have been the Senators and members of the House who are known from one border of the country to the other as reactionaries or stand-patters and not Progressives." He then criticised the President's attitude on public questions under eight heads, the most important being his defense of the Payne-Aldrich tariff, his vetoes of the tariff bills of the special session and of the resolution admitting Arizona, his substitution of a corporation in place of an income tax in the Payne-Aldrich bill, his advocacy of reciprocity, and his attitude towards conservation.

President Taft has continually insisted that he is himself progressive, that he has dedicated the whole strength of his administration to securing advanced legislation, and that he "is going along in the middle of the road between the reactionaries, on the one hand, and the extreme radicals on the other." At Peoria, Ill., Sept. 22, he said: "We middle-of-the-road people who are not extremists are, we believe, the real Progressives, because you do not make progress by great strides; you make progress step by step."

The first contest for state political support between the friends of the President and the Progressives occurred in the Nebraska Republican Convention, July 25, where the supporters of the President secured by a very large majority a "hearty endorsement of the statesmanlike administration of William H. Taft."

Roosevelt's Attitude.—Ex-President Roosevelt has continued to use his powerful influence in favor of progressive measures. In a letter to the Progressive Republicans in Jersey City, the last of January, he wrote:

> I am a Progressive—I could not be anything else. . . . We must work and we must fight for the restoration of popular rule, striving to secure the direct primary, strict election laws, and corrupt practises acts, the popular election of United States Senators, the direct nomination of delegates to Presidential conventions, and, with careful limitations and safeguards, the referendum and initiative, where these are shown to be needed.

In a series of articles in the *Outlook*, beginning Jan. 14, he presented the creed of Progressive Nationalism, following the lines of his speeches on his Western trip in 1910. He has avoided active discussion of either Canadian reciprocity or the tariff bills passed by the special session, but has declared his opposition to certain of President Taft's measures. In different numbers of the *Outlook* he disapproved the veto of the Arizona statehood bill, the President's anti-trust policy and his release of government land on Controller Bay, Alaska, and most vigorously denounced the arbitration treaties with Great Britain and France.

He has declined to be a candidate for the Republican Presidential nomination. Writing to the *Pitsburgh Leader*, Aug. 22, he said: "I must ask not only you but every friend I

have, to see to it that no movement whatever is made to bring me forward for the nomination in 1912. . . . I should esteem it a genuine calamity if such a movement were undertaken." The appearance of his *Outlook* article of Nov. 18, however, in which he severely criticised Mr. Taft's policy, was widely regarded as a tacit announcement that he was a candidate for the Presidential nomination. Within a week, the Garfield Club of Ohio, at its annual dinner, Nov. 21, gave him its public endorsement. But a few days later the Philadelphia *North American* published the following authorized statement, called forth by various rumors as to his political intentions: "Col. Roosevelt will not support any man for the nomination in 1912, neither Mr. Taft nor anyone else . . . As to himself (he) wishes the statement to be accepted at its full value . . . that he desires talk of his supposed candidacy to cease." Notwithstanding these statements, the close of 1911 found Roosevelt widely regarded as a possible candidate in 1912.

Progressive California.—A notable triumph for progressive measures was won at the California election Oct. 10. Twenty-three constitutional amendments, all of a progressive or radical character, were ratified by varying majorities. The initiative and referendum were carried by about 60,000; the recall, including the recall of judges, by about 100,000; and woman suffrage by a little over 2,000. Other amendments granted larger powers to the state railroad commission; gave greater privileges to cities and counties in making their own charters; and adopted the so-called short ballot. The extent of the progressive victory is shown by the unusually large majority given in favor of the recall of judges, a measure recently condemned by President Taft.

Conference of Progressive Republicans.—Two hundred Progressives met in Chicago Oct. 16, and adopted a declaration of principles, drawn up by Ex-Secretary Garfield, C. E. Merriam and Amos Pichot; and endorsed Senator La Follette as their candidate for the presidency. "The Progressive movement," the declaration states, "is a struggle to wrest the control of the government in the nation and states from representatives of special privilege and restore it to the control of the people." The most important resolution related to the trust issue, and reads:

> The present condition of uncertainty in business is intolerable. . . . It is worse than idle to leave the question of whether great business enterprises are legal or not, merely to judicial determination. Industrial corporations should, by affirmative legislative enactment, be given definite rules of conduct by which business shall be made safe and stable, while at the same time the interests of the public should be fully safeguarded.

The direct primary for selecting presidential nominees was favored; but no mention was made in the resolutions of the tariff, conservation or the recall.

The importance of Senator La Follette's endorsement was much lessened by the fact that all of the Progressive Senators, except Crawford and Clapp, and most of the prominent Progressive Congressmen and Governors remained away from the conference. The National Progressive Republican League, organized in January, has not declared itself in favor of either La Follette or any other candidate.

The La Follette Campaign.—Even before his formal endorsement by a part of the Progressives, Senator La Follette had opened extensive headquarters in Washington, from which his supporters have been carrying on, systematically, a wide-spread and energetic campaign to secure for him the Republican presidential nomination.

NATIONAL POLITICS IN 1911

The struggle for political advantage between the two great parties and for leadership within these parties has been especially keen during the past year on account of the approaching Presidential election. The important political questions before the public, which, however, have not

been clear-cut issues between the Republicans and the Democrats, have already been described, as well as the views of President Taft and Ex-President Roosevelt, the two most influential Republican leaders.

Senator La Follette.—The only avowed candidate for the Republican nomination in opposition to Mr. Taft has been Senator Robert M. La Follette. Born in Wisconsin in 1855, he was District-Attorney at 23, a Congressman from 1885 to 1891, Governor of Wisconsin from 1901 to 1905, and United States Senator from 1905 to the present. From his earliest political experience, as he has explained in his autobiography now appearing in the *American Magazine*, he has fought the existing party machine and relied upon direct personal appeal to the individual voters. His national reputation began when, as Governor, he made Wisconsin a thoroughly progressive state by such laws as those providing for direct primaries, state control of railroad rates, full taxation of railroad property, and punishment of corrupt election practices. In the Senate this past year he has been the recognized leader of the Progressive Republicans, and as such has taken a foremost part in opposing Canadian reciprocity, in drawing up and passing the tariff bills of the special session, and in the effort to unseat Senators Lorimer and Stephenson on charges of political corruption. He stands for the entire Progressive platform, already described, and, although he has little, if any, political strength in the Eastern States, has a large and enthusiastic following in parts of the West and the Middle-west. (See *supra*, *The Progressives*.)

The Republican National Committee.—At its meeting in Washington, Dec. 12, the Republican National Committee voted to hold the Presidential nominating convention in Chicago, June 18. It appointed former Governor J. F. Hill of Maine, National Chairman, in place of Secretary Hitchcock resigned, and created a sub-committee, headed by H. S. New of Indiana, to have charge of the arrangements for the convention. It decided that delegates might be chosen by direct primary election in those states which had primary laws, provided the Republican State Committee so desired; but that in all other states the choice must be made by conventions. This decision was a disappointment to some of the Progressives, led by Senator Borah, who wished to authorize any state to hold a primary election if it wished to do so.

In a number of states, therefore, delegates to the Republican Convention will be elected by direct popular vote; and in five, Nebraska, New Jersey, North Dakota, Oregon and Wisconsin, members of both parties will be permitted by state law to express their choice for their Presidential nominees.

The committee was controlled by the supporters of President Taft, although it was evident that the belief was held by many Republicans throughout the country that the only hope for party success in 1912 lay in forcing the nomination upon Mr. Roosevelt.

Governor Woodrow Wilson.—One of the strongest candidates for the Democratic nomination has been Woodrow Wilson. Born in Virginia in 1856, a life-long student of the science of politics, he resigned the presidency of Princeton University in 1910 to become the successful candidate for governor of New Jersey. During the first half of the past year, with a Democratic House and a Republican Senate, both seemingly under the control of party machines, he succeeded, by a combination of masterfulness, tact and reliance upon the people, in placing himself instead of the boss at the head of his own party, and in securing the enactment of a remarkable series of laws which have made New Jersey one of the most progressive of states. These new legislative measures included a rigid corrupt practices act; provisions for direct primaries for all elective offices, including that of United States Senator, and for delegates for national party conventions; the inauguration of State control of railroad, trolley, gas, telegraph and similar corporations and a workingmen's compensation act.

Governor Wilson aims to "restore representative government." To do

this he believes that the Executive, on behalf of the whole people, should become the responsible leader of the state government, both administrative and legislative; that the initiative and the referendum may be used as emergency measures, but not the recall of judges. Though generally regarded as an advanced Progressive, he believes in carefully preserving the rights of the states from infringement by the national government, and, until recently, strongly opposed such measures as the initiative and referendum which he now advocates. He has not clearly defined his position on some of the leading national issues, notably that of the trusts.

Governor Judson Harmon.—Another prominent candidate for the Democratic nomination has been Governor Judson Harmon. He was born in Ohio in 1846, and was Attorney-General in Cleveland's Cabinet from 1895 to 1897. In 1908 he was elected Governor of Ohio by 19,000 majority although President Taft, at the same time, carried the state by 70,000. During this two-years' term, while unable to obtain desired legislation because of Republican control in both Houses, he yet succeeded in uniting the factions of his own party and in securing greater honesty and efficiency in the state administration. In 1911, largely by his influence, the legislature, which was now Democratic, passed a series of laws almost as remarkable as those in New Jersey. These included acts providing for workmen's compensation, strict regulation of public utilities, primary election of United States Senators, suppression of corrupt practices in elections, a limited initiative and referendum for cities, and a reformation of the assessment system by which corporations are compelled to pay their equitable proportion of state taxes. Despite this record, he is regarded as less radical than Governor Wilson both in temperament and in political belief.

Speaker Champ Clark.—Champ Clark, who has been frequently mentioned for the Presidency, was born in Kentucky in 1850, but later removed to Missouri. He has served nineteen years in Congress, was minority leader of the House from Dec., 1908, to March, 1911, and was elected Speaker the following month, upon the organization of the 62nd Congress. Mr. Clark has been largely instrumental in consolidating the Democratic majority in the House and has received much credit for the legislative record of his party during the past year. While personally popular, he is handicapped by an occasional recklessness of statement, such as his declaration in the House, already quoted, in favor of the annexation of Canada. In similar vein he said, at Fremont, Neb., Nov. 2, "Let me run for President on a platform calling for annexation of Canada, in so far as this country can accomplish that end, and let President Taft run against me, opposing annexation, and I would carry every state in the nation."

Oscar W. Underwood.—Born in Kentucky in 1862, Mr. Underwood early settled in Alabama, from which state he has been elected to Congress for eight terms. For several sessions he was on the Ways and Means Committee, next in Democratic rank to Champ Clark; and was made Chairman in April, the past year, when Mr. Clark was elected Speaker. He has shown marked ability in arranging the committee appointments, a task which under the new Democratic House rules practically falls to the Ways and Means Committee, in his preparation of the tariff bills of the special session and of the voluminous reports which accompanied them, and in his floor leadership of his party. His recent striking success in directing legislation in the House together with his sound judgment and tact, have made him a prominent candidate for the Democratic nomination.

Democratic Record in Congress.—The Democratic party appeals for popular support upon its legislative record in Congress. In the special session the Democratic majority revised and liberalized the House rules; began economies in the public expenses; passed a resolution submitting a constitutional amendment providing for the popular election of United States Senators; and bills to compel the publication of campaign expenses before election, to admit New Mexico

and Arizona as separate states; to revise the wool and cotton schedules and to reduce the duties on many articles used by the farmers. Speaker Champ Clark in an article in the September number of the *North American Review*, makes the claim that the House of Representatives "in four months has passed more constructive legislation than any House has passed in the same length of time in two decades."

In the few days of the regular session before adjournment Dec. 21, for the Christmas holidays, the House passed three important measures. The first was the Sherwood pension bill, passed Dec. 12, which, if enacted, will give to each old soldier, without regard to his wounds, debility or present needs, from $15 to $30 a month, depending upon the length of his service. Secretary Fisher has estimated that this will add $75,000,000 to the government's annual expenditures, if the veterans who are eligible take advantage of its provisions. Underwood opposed the bill with about 80 other Democrats because it violated the party's pledge of economy; but it received the support of nearly all the Republicans.

The second was the Sulzer resolution, passed Dec. 13, calling for the abrogation of the Russian treaty of 1832; it forced action by the President, but was open to the charge of needlessly irritating a foreign power. The third, passed almost unanimously Dec. 14, provided that the eight-hour day for laborers and mechanics in government work should be extended to work done for the government by private contractors.

The efficiency of the Democratic majority during these first three weeks of the regular session is apparent, but the statesmanlike quality of some of the legislation may be questioned. The political aspect of the three bills was humorously pointed out to the Democrats by the Socialist Congressman, Berger, who said, Dec. 14, "Day before yesterday you got the old soldier vote; yesterday you got the Jewish vote; and today you have gone after the labor vote."

THE PRESIDENT IN 1911

During the past year the President took executive action in a number of instances which attracted general attention and interest; the most important concerned the Mexican border trouble, the Wiley controversy, and the anti-Jewish prejudice in the army. He gave addresses in many parts of the country; and in September and October made a notable 15,000-mile trip, speaking to large audiences in over 20 different states.

The Mexican Situation.—A revolution had been going on in Mexico for some months, but it aroused no particular interest in this country until March 8, when the press announced that the President had suddenly ordered some 20,000 of the United States army to mobilize at San Antonio, Texas, not far from the international boundary, "for the purposes of field instruction." At the same time 2,000 marines were sent to Guantanamo, and five cruisers started for Galveston. It was soon admitted semi-officially that the necessity of enforcing neutrality along the southern border and of preparing for any emergency which might result from the state of semi-anarchy existing in parts of Mexico, were largely responsible for the movement. (See also V, *International Relations.*)

The revolutionary forces, in which many American citizens were fighting, used United States territory as a base of operations; they brought their arms and supplies very largely from this country, and when defeated they found safety by retreating across the line. The regular troops were soon ordered to patrol the border and to prevent the transport of military supplies for the revolutionists.

The necessity of bringing together such a large proportion of the American army for patrol duty was, at first, seriously questioned by many, and the American press suggested that there must be a secret reason for the President's order, such as the fear that some European power was planning to violate the Monroe doctrine or that Japan was about to obtain a naval coaling station at Mag-

dalena Bay. In Europe, the Continental press frequently asserted that mobilization was merely the beginning of the annexation of Mexico. Some of the German papers especially claimed that the United States was taking advantage of the disturbed conditions to strengthen its control over both American continents to the exclusion of all other powers, and so proposed that an international conference should be called to settle the Mexican situation in the interests of all.

The Question of Intervention.—As the revolution developed in strength the fighting between its forces and those of the government took place so near the border that men and women were shot on American territory. The first instance of this was April 17, during the battle at Agua Prieta, a town immediately opposite Douglas, Ariz. As some of the revolutionists' intrenchments were only 100 yd. from the United States line, it was almost unavoidable that shots should strike over the boundary. The result was that one or more citizens of Douglas were killed and ten or so wounded. Governor R. F. Sloan, of Arizona, at once telegraphed President Taft, "In my judgment radical measures are needed to protect our innocent people, and if anything can be done to stop the fighting at Agua Prieta, the situation calls for such action." The President replied, in part, "The situation might justify me in ordering our troops to cross the border and attempt to stop the fighting or to fire upon both combatants from the American side. But if I take this step I must face the possibility of resistance and greater bloodshed, and also the danger of having our motives misconstrued and misrepresented and of thus inflaming Mexican indignation against many thousands of Americans now in Mexico, and jeopardizing their lives and property." The President sent urgent demands to the Mexican government that there should be no more firing across the American line; and both government and revolutionary leaders promised to avoid this in the future so far as possible. The general indignation in the United States was shown by a motion in the Senate by Stone of Missouri, that Congress "should at once and without delay authorize the President to employ whatever force may be necessary to prevent a repetition of the bloody outrage committed at Douglas."

The President, however, did everything possible to avoid the necessity for intervention. He used the troops to enforce strict neutrality along the border and to keep the inhabitants of American towns opposite Mexican battlegrounds out of the zone of danger. He sent orders to the officers of the United States army that they should under no circumstances allow any of their men to cross the international boundary. He also announced that he would take no action looking toward intervention until so directed by Congress.

Some three weeks later, May 8, a situation similar to the one at Douglas developed at El Paso, Texas, where some half dozen Americans were killed and about a dozen wounded by the fighting which took place in the Mexican town, Juarez, immediately opposite. The complete victory of the revolutionists which soon followed and their establishment of a reasonably stable government obviated the necessity for any military action in Mexico by American troops.

President Taft's moderation resulted in creating a feeling of goodwill toward the United States not only in Mexico but in other Latin-American countries as well and in impressing them with the sincerity of America's friendship.

In his message to Congress, Dec. 7, the President described in full his reasons for the mobilization and included a copy of his orders to General Leonard Wood, Chief of Staff. He communicated no facts of vital importance not already known to the public.

The Wiley Controversy.—Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry in the Department of Agriculture, has been popularly identified with the effective enforcement of the pure food and drug act. Widespread interest was aroused, therefore, when it was announced in the press, July 13, that Attorney-General Wickersham had recommended his

dismissal from the government service on account of a technical violation of law in connection with the appointment of Dr. H. H. Rusby as consulting expert in the Department. It appeared that Dr. Rusby had previously been paid $20.00 a day for laboratory work when analyzing foods and drugs, and $50.00 a day for attendance in court. In 1909, however, the Attorney-General ruled, in view of the law of 1907, which provided that "the maximum salary of any classified scientific investigator . . . shall not exceed $3,500," that the daily compensation of such an expert could not be above this yearly rate, i. e., $9.00 a day. The Personnel Board of the Department of Agriculture, headed by Solicitor G. P. McCabe, charged that Dr. Wiley had, in consequence of this ruling, hired Dr. Rusby at an annual salary of $1,600; but that he had a secret understanding with him by which he was allowed to work just enough days to earn this amount at the rate of $20.00 per day for laboratory work and $50.00 for court attendance, thus conspiring to evade the law. The Personnel Board recommended that Dr. Wiley be allowed to resign; this recommendation was ratified by the Attorney-General, who advised that "condign punishment" should be inflicted.

President Taft reviewed the whole case, and, Sept. 15, sustained Dr. Wiley on all points. The President stated that Dr. Wiley had not been heard in defense by the Personnel Board; that he knew nothing about the secret correspondence with Dr. Rusby, upon which the charge of violation of law was based; that his appointment of Dr. Rusby at a salary of $1,600, with the understanding that he should give only part of his time to government service, was justified by precedents in the Department of Agriculture; and that Attorney-General Wickersham had made his ruling upon insufficient evidence. After thus completely exonerating Dr. Wiley, the President seemed to criticise those who were responsible for the attack, and said, "The broader issues raised by the investigation, which have a much weightier relation than this one to the general efficiency of the department, may require much more radical action than the question I have here considered and decided."

This vindication of Dr. Wiley was greeted by almost universal approbation; the charges reacted against those who originated them and strengthened him both in the Department and in the country at large.

Anti-Jewish Prejudice.—The President had occasion, June 5, strongly to censure the anti-Jewish feeling shown by one of the officers of the United States Army. The facts in the case were that Private Frank Bloom, after several years' service, took an examination leading to a lieutenancy, but failed; his papers were endorsed by his superior, Col. Garrard, with a protest against Bloom's appointment as an officer, on the ground that his father was a Jewish tailor at the army post. "From an experience of many years," wrote the Colonel, "I have found, except in a few cases, few communities where Jews are received as desirable associates."

As soon as President Taft learned of the matter, he wrote: "It is difficult for me to read the endorsement of Col. Garrard . . . without condemnatory words that had better not be written. . . . The statements made by Col. Garrard are not true with reference to the standing that Jews have in this country, and I resent, as Commander-in-Chief of the Army and the Navy, that any officer of either should permit himself in an official document to give evidence of such unfounded and narrow race prejudice as that contained in this endorsement." The President directed that the Secretary of War should reprimand Col. Garrard, and, further, that another examination should be held. Bloom passed this second test in September, which promotes him to a lieutenancy in the regular army. (See also XXXIII, *Judaism.*)

The President's Speeches.—More than any of his predecessors President Taft has relied upon a direct personal appeal to the American people. When the Canadian reciprocity measure was still undecided in Congress, he said: "The bill will pass, if it passes at all, because of the force of public opinion in its favor." With

the purpose of developing this public opinion he made a large number of addresses in favor of reciprocity, some of the more important of which were delivered at the following places: Columbus, Ohio, at the State Fair, Feb. 11; Atlanta, Ga., at the Southern Commercial Congress, March 10; New York, at the Associated Press Banquet, April 27, and at the Interstate Cottonseed Crushers' Association, June 8; Providence, R. I., and Fall River, Mass., June 23; Indianapolis, at the Marion Club, July 4, and at the State Fair, July 5.

The other subject upon which President Taft spoke most frequently during the first half of the year, was international peace; he aimed to build up a sufficiently strong popular support for the treaties of unlimited arbitration with Great Britain and France to ensure their ratification by the Senate. He gave addresses on this subject in Baltimore, at the Peace Congress, May 3; Ocean Grove, N. J., Aug. 15; Rochester, N. Y., Aug. 22; Boston, before the American Bar Association, Aug. 31; and Hartford, at the State Fair, Sept. 7.

With the aim of explaining directly to the people his leading policies and the reasons for his executive acts, he planned the most extensive trip undertaken by any President. He left Beverly, Mass., his summer home, Sept. 15, and, after 47 days of almost continuous speaking, reached the White House Nov. 1. In this time he journeyed to the Pacific and return; visited considerably over 100 cities, including, in order, Syracuse, Detroit, St. Louis, Kansas City, Denver, Salt Lake City, Seattle, San Francisco, Los Angeles, Minneapolis, St. Paul, Milwaukee, Chicago and Pittsburgh; and gave over 300 addresses. The most important of these related to the tariff, in which he defended his vetoes of the wool, cotton and free-list bills, and promised reductions in accordance with the recommendations of the Tariff Board, to be made early in December; the trusts, in which he defended the Sherman Act and the Standard Oil and Tobacco decisions of the Supreme Court and warned the business interests that they must strictly obey the law; and international peace, and the arbitration treaties pending with Great Britain and France, the ratification of which he strongly urged. Besides these leading subjects he spoke upon conservation, the Monroe doctrine, loans to the Latin-American countries, the expedition of court procedure, the recall, farming, and other questions of public interest.

Throughout his trip Mr. Taft was received by large crowds and given the attention and respect due to the President of the United States; but whether he was successful in his attempt to lead and direct public opinion in the western and middle-western states, the stronghold of the Progressives, may well be doubted.

Within two hours after reaching Washington, Mr. Taft was again in his special car, and on the way to New York, where, Nov. 2, he reviewed 99 United States warships, including 24 battleships, the largest assemblage in the history of the American navy. A rest of five days at the Virginia Hot Springs was followed by speeches in Tennessee and Kentucky, the most important of which was at Hodgenville, Ky., Nov. 9, where he accepted, on behalf of the nation, the granite memorial, built by popular subscription, which enshrines the rude log cabin in which Abraham Lincoln was born.

THE ELECTIONS

The elections which were held in a few of the states in November gave no indication of any general drift of popular opinion towards either of the leading parties, but seemed merely to show a further weakening of party ties and dissatisfaction with machine rule. The Socialists, however, made striking gains.

In Massachusetts the Democrats reëlected Gov. Foss by 8,000 plurality, about 5,000 less than he received a year ago; but the Republicans chose all the other state officers, and increased their majority in the legislature. Kentucky elected a Democratic Governor, after four years under a Republican executive.

In Ohio, the municipal elections were favorable to the Democrats, who carried Columbus; Cleveland, where N. D. Baker, a former colleague of the late Tom L. Johnson, was elected mayor; and Cincinnati, where the regular Republican candidate, though openly supported by President Taft, was defeated. In New Mexico, which as a territory had been Republican, a combination of Democrats and Progressive Republicans elected its entire state ticket, and two Congressmen; the Republicans secured a small majority of the legislature.

To counterbalance these Democratic successes the Republicans won victories in New York, New Jersey, Maryland and Rhode Island. They secured control of the New York State Assembly, and on joint ballot of the two Houses turned a Democratic majority of 31 into a Republican majority of 43. In New York city they reduced the Democratic majority on the county and judiciary tickets and secured control of the Board of Aldermen, one of the chief sources of Tammany's strength. In New Jersey, where in 1910 the Democrats elected Woodrow Wilson together with a majority of the legislature, the Republicans now won control of the lower House and a majority on joint ballot. In Maryland the Democratic machine was broken by the election of a Republican Governor, the second since the Civil War. Rhode Island gave the Republicans largely increased majorities over a year ago; and adopted a constitutional amendment providing for biennial elections.

Three Congressmen were chosen to fill vacancies. In the 1st district of New Jersey, a Republican was elected by a reduced majority; in the 2nd Kansas, a Democrat replaced a Republican; and in the 3rd Nebraska, a Democrat was chosen by an increased plurality.

Of the municipal elections, the most notable were those in Philadelphia, where Rudolph Blankenburg, a reform candidate, was elected over the regular Republican nominee, G. H. Earle, Jr.; and in San Francisco, where a reform candidate won against the present labor-unionist mayor.

The surprising feature, however, was the success of the Socialists. In Schenectady they elected the mayor and a majority of the city council by large majorities, and sent a Socialist from their district to the state legislature. Further, they elected the mayors of 12 towns and cities in Ohio, 5 in Utah, several in Pennsylvania, and 1 each in Minnesota and Mississippi. They increased their vote throughout the country; in some of the Eastern cities by as much as 600 per cent. As a result Congressman Berger, of Wisconsin, prophesied that his party would cast 2,000,000 votes in 1912. The non-Socialist press, for the most part, attributed this large vote merely to general dissatisfaction with the present misgovernment of cities. (See also XV, *Socialism.*)

In Arizona, which held its first election as a state Dec. 12, the Democrats gained a sweeping victory, carrying their entire ticket, including governor, congressman, and a majority of the legislature; they also obtained large popular majorities for their two candidates for the United States Senate.

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V. INTERNATIONAL RELATIONS

ALBERT HALE

Senator Elihu Root, at the Fifth Annual Meeting of the American Society of International Law, held in Washington (April 27-29, 1911), said "that the year has not been without great interest in international affairs." He mentioned as of particular importance during the twelve months preceding his address, the fourth Pan-American Conference at Buenos Aires; the International Conference at the Hague for the Unification of the Laws relating to Bills of Exchange; the third international Maritime Conference at Brussels; the second Central American Conference and its endeavors to accomplish results practical instead of theoretical; the Savarkar case between Great Britain and France before the Hague tribunal; the Orinoco Steamship Company case at the Hague (settled since the address); the Canadian Fisheries case; the "Chamizal Case" between Mexico and the United States; the new treaty between the United States and Japan, and the reciprocity treaty between Canada and the United States. Much hope was expressed that the recently created Prize Court Convention at the Hague was to become a permanent and satisfactory element in settling many international problems.

Since that meeting the remaining months of 1911 have passed, and the assertion of Mr. Root have been more than confirmed. In fact the year has been unusually productive of affairs hinging upon international relations, most of them carrying promise that arbitration is becoming more and more engrafted upon the activities of international politics, and that the principles of international peace are recognized as of essentially practical value in human society; many of them, however, showing that a resort to arms is still the instinctive and inherent desire among the people and politicians of one nation to assert their rights and to secure advantage over those of another.

In order to offer a systematic *résumé* of the events of an international character marking the year 1911, it has been thought best to distribute the subject under certain subheads. This may demand an unavoidable repetition of statement in a few instances, but clearness will thereby be obtained. These divisions are: "Chronological Narrative of Events"; "Treaty and Other International Agreements"; "Celebrations and Expositions"; with detailed discussion of those which seem of greatest importance.

CHRONOLOGICAL RECORD OF EVENTS

Toward the end of 1910, but not mentioned in the last YEAR BOOK, these must be noticed: (Dec. 4) the opening of a foreign Chinese loan for the development of the navy of $25,000,000; (Dec. 4) reëstablishment of diplomatic relations between Argentina and Bolivia; (Dec. 14) endowment by Mr. Andrew Carnegie of a peace fund of $10,000,000; (Dec. 15) meeting in Washington of the American Society for the Judicial Settlement of International Disputes; (Dec. 22) arrest as spies of two British army officers in Germany; (Dec. 23) Emperor of Japan emphasizes the necessity of peace; (Dec. 31) the new government in

Nicaragua recognized by the United States, and agreement between the United States and Canada for an international railway commission to regulate rates.

(N. B.—Those items marked * receive further details in the text.)

January

7.—Reciprocity negotiations between United States and Canada renewed.*

10.—Secretary of State Knox and Honduran Minister of Finance conclude a treaty by which the United States guarantees a loan to Honduras without assuming a financial protectorate.*

14.—Agreement between United States and Canada over fisheries protectorate is reached.

15.—United States protests to Guatemala against alleged support of revolution in Honduras.

17.—Haiti and Dominican Republic sign a peace convention, withdrawing troops from frontier.

18.—Colombian troops cross into Peruvian territory.

20.—Ecuador declines to submit to Hague boundary dispute with Peru. Commissioners of United States and Canada reach reciprocity agreement at Washington.

25.—American cavalry sent to Mexican frontier.*

26.—Reciprocity agreement between United States and Canada submitted to legislative bodies of both countries.*

30.—Students of Cracow University (Austria) protest against appointment of a German professor, and the institution therefore closed.

February

2.—The Honduras Congress refuses to approve negotiations for American loan.*

3.—President Taft tenders services of United States to assist in restoring peace in Honduras. The United States Government announces its readiness to assist in combating plague in China.

7.—The House passes the Lowden Bill, providing for $500,000 a year for the purchase of embassy buildings abroad.

8.—President Dávila, of Honduras, and General Bonilla, the revolutionary leader, agree to an armistice at the suggestion of the United States.

9.—Great Britain and Austria-Hungary agree to submit to Hague Tribunal any dispute over an existing treaty which cannot be settled by diplomacy.

10.—W. Morgan Shuster is said in Washington to be appointed treasurer-general of Persia to reorganize its finances.*

13.—President Taft appoints John Hays Hammond as special ambassador to coronation of George V.

15.—It is announced at Washington that contracts have been signed for a $7,500,000 loan to Honduras.*

—U. S. Senate ratifies convention creating international prize court.

16.—Russia decides to make a military demonstration against China because of alleged violations of St. Petersburg treaty of 1881.

19.—Japan denounces the existing trade treaty with Canada.

20.—China takes the first active efforts to suppress the plague.

21.—The President sends to the Senate a new treaty with Japan.*

24.—The new treaty with Japan is ratified by the United States Senate.

March

4.—President Taft calls the 62nd Congress in special session on April 4, to consider the Canadian reciprocity agreement.*

8.—It is announced that orders have been issued for the mobilization on the Mexican frontier of 30,000 troops.*

—President Taft assures President Diaz that this action does not imply any occupation of Mexican territory.

14.—The Russian minister to Pekin presents an ultimatum to the Chinese Foreign Board, stating that an unfriendly attitude is shown in China's recent reply concerning restriction of Russian trade.

15.—The German Government states that it is ready to join any agreement looking toward international arbitration of all disputes.

19.—China replies in a conciliatory spirit to Russia's recent demands.

21.—The Turkish army and navy loan of $31,500,000 is oversubscribed in Berlin.

April

1-2.—Nine hundred meetings are held in Great Britain to further the Anglo-American arbitration treaty.*

3.—A treaty of trade and navigation between Great Britain and Japan is signed in London.*

—Great Britain and the United States agree to arbitrate the Webster claim in New Zealand.

4.—Ratification of the Japanese-American commercial treaty exchanged at Tokyo.*

15.—The $50,000,000 loan to China, participated in by American, British, French and German bankers, is signed at Pekin.*

27.—France notifies the signatories to the Algeciras convention that French intervention in Morocco is necessary to protect foreigners at Fez.

29.—The International Exhibition of Industries and Labor is opened at Turin, Italy.*

May

5.—Ratifications of the Anglo-Japanese commercial treaty are exchanged at Tokyo.*

—Russia inquires of Japan her reason for establishing a consulate in Manchuria (Aigun) near the frontier.

—International Opium Congress postponed until July, 1912.

8.—Germany warns France of the serious consequences that might follow a French occupation of Fez.*

—An agreement between China and Great Britain, providing for the gradual extinction of the Chinese production and importation of opium, is signed at Pekin.

14.—The general assembly of the International Institute of Agriculture meets at Rome; King Victor Emanuel congratulates the Americans on their representative delegation.

17.—The draft of a general treaty of arbitration is submitted by Secretary Knox to the British and French ambassadors.*

—The German-American potash conference at Hamburg reaches an agreement regarding prices and taxes.*

20.—A $30,000,000 loan for the construction of railways in China is signed at Pekin by representatives of American, British, French and German bankers.*

23.—Russia warns Turkey that the concentration of troops on the Montenegrin frontier is a menace to peace.

—French troops arrive at Fez, meeting but little opposition.

24.—It is announced at Washington that Japan is willing to consider an arbitration treaty.

26.—Announcement is made at Washington that Russia will henceforth accord more liberal treatment of Jewish travelers.

29.—Japan and Russia express a desire to share in the $50,000,000 international loan to China.*

June

3.—President Taft speaks in favor of the Canadian reciprocity treaty before the Western Economic Society at Chicago.

7.—Germany warns France to respect the sovereignty of Morocco and points out the danger of a military policy.*

12.—France announces that she will deal with Spain on the subject of Morocco without conferring with other European powers.*

13.—W. Morgan Shuster, an American financier, is given full control of Persia's finances.

19.—The United States Government officially recognizes the new Portuguese Republic.

21.—The German Emperor visits the American battleships at Kiel.

—First constitutional President of the Republic of Portugal is elected.

28.—It is announced in Washington that the Anglo-American arbitration treaty has been agreed upon in every important provision.*

29.—Russia admits Jewish buyers to the fur trade at Tyumen.

July

1.—German troops are landed at Agadir, Morocco, causing uneasiness in France.

4.—Germany sends the cruiser *Berlin* to Agadir to replace the gunboat there.

5.—The United States, Great Britain, France, Germany and Italy submit a note to Haiti, insisting that claims of their citizens be settled within three months.

—King George, of England, submits decision on Alsop case.*

—Turkey begins military preparations in view of Montenegro's activity.

7.—A treaty abolishing pelagic sealing is signed at Washington by the United States, Great Britain, Russia and Japan.

9.—The French ambassador at Berlin and the German Foreign Minister issue a semi-official note about Morocco.

10.—Russia informs Germany that she agrees with France on the Morocco affair.

12.—France asks Spain to explain the arrest of two Frenchmen in Morocco.

14.—Great Britain and Japan sign a new treaty of alliance to last ten years.

19.—The United States Government denies the contemplation of intervention in Cuba.

—The Spanish ambassador at Paris regrets the arrest of the French consul-general in Morocco.

—The United States Senate ratifies the treaty with Great Britain which provides for the arbitration of certain pecuniary claims.

21.—The Persian Government criticizes Great Britain and Russia for indifference concerning the present activity of the deposed Shah.*

24.—The United States ratifies the fur seal treaty, by which the United States, Great Britain, Japan and Russia prohibit sealing for 15 years.

26.—Queen Wilhelmina of Holland visits King Albert at Brussels; it is rumored that an agreement is contemplated to act jointly in the event of their countries' neutrality being threatened.

28.—The terms of the Franco-Spanish *modus vivendi* to prevent trouble at Alcazar, Morocco, are outlined by the Spanish premier.

—The Portuguese Republic again protests to Spain against permitting anti-republican plotters to meet in Spanish territory.

—The Canadian premier announces a plan of coöperation between the navies of Great Britain, Canada, Australia and New Zealand.

29.—The Persian government sets a reward of $100,000 upon the head of the ex-Shah.

31.—The Russian minister to Persia moves to force the resignation of the American Treasurer-General, W. M. Shuster.

August

1.—The German minister to Persia joins in the movement against the American treasurer-general.

2.—Two newspaper correspondents, one an American, are expelled from Agadir.

3.—The International Peace Conference, at Berne, Switzerland, takes steps to form a permanent bureau of peace.

4.—It is reported from Berlin that an agreement has been reached, involving the trading of colonial possessions, in the dispute between France and Germany over Morocco; the Kaiser is bitterly assailed by several German newspapers for his timidity.

6.—Laboring men of France and Spain meet in Madrid to protest against military operations by their governments in Morocco.

8.—Several diplomatic changes are announced in the American corps; including the transfer of Minister Leishman from Italy to Germany, the appointment of Lars Anderson and Lloyd Bryce to Belgium and The Netherlands.

9.—The Tenth Zionist Congress opens at Basle, Switzerland.

21.—A Socialist mass-meeting in Berlin protests against Germany's policy in the Moroccan controversy.

26.—An American shipbuilding company secures contract for Chinese warships.

27.—The Pope receives the Cardinal Archbishop of Rio de Janeiro and bestows the apostolic blessing on the churches of South America.

28.—The Emperors of Russia and Japan exchange telegrams of felicitation upon the final settlement of all claims growing out of the recent war.

—It is announced at Colon that the United States has acquired four small islands at the western end of the Panama Canal.

29.—Admiral Togo sails for Japan from Seattle.

31.—It is stated that France has offered Germany certain portions of the French Congo in exchange for absolute recognition of her rights in Morocco.

September

2.—A statue of Baron von Steuben, presented to Germany by the United States, is unveiled at Potsdam and accepted by the Emperor.

4.—Negotiations between France and Germany are resumed at Berlin.

6.—The Canadian Government seizes an American fishing schooner at Louisberg, C. B., alleging a violation of the treaty of 1818. (And fined, Sept. 11.)

7.—Unrest in China over the Government's railroad policy causes a serious uprising, directed mainly against foreigners.

11.—The cruiser *Hai Chi*, the first Chinese warship to enter the port of New York, drops anchor in the Hudson River.

12.—The Viceroy of Sze-Chuen province, China, is commanded by imperial edict to suppress the uprising.

—It is announced at Washington that Japan will abandon its naval station at Port Arthur, Manchuria, and open the port for use of the merchant marine.

18.—Advices from the besieged city of Cheng-yu, China, where the foreigners have assembled, state that they are unmolested.

October

10.—The successful conclusion of the negotiations of France and Germany over Morocco is announced.

22.—Spain disarms 400 Portuguese royalists on her borders.

25.—Alfred Sze, a graduate of Cornell University, is appointed Minister from China to the U. S.

29.—Persian revolters (Turcomans), aided by Russia, defeat a Persian Government force near Bender-Gez.

November

7.—Colombia occupies Pedrera, territory in dispute with Peru.

11.—King George and Queen Mary sail from England for the Durbar in India.

12.—Strong rumors are spread that Belgium would quit the Congo and that a repartition of Africa among other powers was contemplated.

14.—Spain and Germany confer about the cession to the latter of Spanish Guinea.

16.—Mr. Shuster, Persia's American financial agent, refuses to yield to Russia and Russian troops are ordered to Persia.

17.—Russia presents an ultimatum to Persia demanding Mr. Shuster's dismissal.

December

1.—Russia orders an advance on Teheran, following Persia's refusal to dismiss Mr. Shuster.

4.—The Persian National Council appeal to the United States for aid against Russia.

5.—A decisive victory over the Turks outside Tripoli is conceded to ensure possession of the country to the Italians.

7.—The naval prize bill, approving the Declaration of London, is passed by the British House of Commons.

13.—The House of Lords rejects the naval prize bill on its second reading.

14.—The House of Representatives passes the Sulzer resolution demanding abrogation of the Russian treaty.*

17.—President Taft abrogates the Russian treaty.

19.—The Senate ratifies President Taft's abrogation of the Russian treaty.

20.—The House of Representatives ratifies President Taft's abrogation of the Russian treaty.

—The French Chamber of Deputies ratifies the Franco-German accord on Morocco.

20.—The representatives of Great Britain, France, Germany, Japan, Russia and the United States express their good will and hope for a speedy settlement of the Chinese revolution to the peace conferees at Shanghai.

22.—Persia accepts the terms of Russia's ultimatum and prepares to dismiss Mr. Shuster.

TREATIES AND OTHER INTERNATIONAL AGREEMENTS

During the latter part of 1910 several important international agreements were signed, but the chronological order would better commence on the first of 1911. It is worth while, however, to mention certain treaties or conventions which were accepted just before the close of 1910, in order to make the record of these YEAR BOOKS complete. Such are the ratifications exchanged (Dec. 1) at London, of a convention signed at London, July 16, 1910, providing for the settlement by arbitration of certain classes of cases that may arise between Austria-Hungary and Great Britain; the proclamation issued by the President of the United States granting German subjects copyright benefits under the act of March 4, 1909; the award of the Noble Prizes on Dec. 10, to the International Peace Bureau at Berne, to van der Waals of Holland (Physics), Wallach of Germany (Chemistry), Kossel of Germany (Medicine), Paul Heyse of Germany (Literature); and the Agreement on Dec. 30 between Great Britain and Norway providing for the telegraph service between the two countries.

January.

1.—Agreement exempting commercial travelers' samples from customs inspection effective between Great Britain and the United States.

—*United States-Nicaragua,* diplomatic relations renewed.

9.—First South American Postal Congress inaugurated at Montevideo.

9-12.—*Great Britain-United States,* conference held at Washington on the application of the award delivered in 1910 in the North Atlantic Coast Fisheries Arbitration, to existing regulations of Canada and Newfoundland.

10.—*Argentine-Bolivia,* diplomatic relations resumed.

12.—*Brazil-Uruguay,* arbitration treaty signed at Petropolis.

—*Morocco-Spain,* agreement entered into for the settlement of difficulties arising in regions about places controlled by Spain.

13.—*France-Liberia,* treaty signed at Paris fixing boundaries between Liberia and the French possessions.

13-14.—*Great Britain-United States,* conference at Washington concerning existing laws and fisheries regulations of Canada.

17.—*Central American Republics,* convention signed at Guatemala for the exchange of parcels post between Central American Republics.

20.—The International School of American Archæology and Ethnology inaugurated in Mexico City by the Mexican and Prussian governments and Columbia and Harvard Universities.

23.—International Oceanographic Institute opened at Paris.

24.—*Austria-Hungary-Servia,* treaty of commerce (Belgrade, 1910) effective.

25.—*Germany-Switzerland-Italy,* concluded agreement for telephone line between Berlin and Rome.

27.—*Bulgaria-Turkey,* the existing commercial convention ceases.

30.—*Germany-Great Britain,* a treaty for the extradition of criminals between German and British protectorates signed at Berlin.

—*Great Britain-Paraguay,* ratification of a treaty providing for the mutual surrender of fugitive criminals.

February

1.—*Finland-Hungary* exchange money orders through the agency of Sweden.

6.—*Bulgaria-Turkey,* a convention of commerce and navigation signed at Constantinople. Terminates Oct. 1, 1911.

8.—*France-Mexico,* arbitration of Clipperton Island controversy approved.

13-17. — Pan-American Commercial Conference met at Washington.

14.—Hague Court handed down the award in the Savarkar case, between France and Great Britain.

17.—*France-Portugal,* notes exchanged at Lisbon arranging a commercial agreement effective at once to be superseded by a definite convention.

19.—*Canada-Japan,* Japan denounces the existing commercial treaty.

21.—*Japan-United States,* treaty and protocol of commerce and navigation signed at Washington.

March

1.—*Bahama Islands-Mexico,* money orders exchanged on a private agreement.

—*Great Britain-Tunis,* telegraph money-order exchange inaugurated.

3.—*Denmark-Great Britain,* arbitration convention is renewed for five years.

9.—*France-Japan,* reciprocal protection of trade marks in China approved.

15.—International arrangement for the suppression of the circulation of obscene publications ratified by France, Belgium, Germany, Spain, the United States, Great Britain, Italy, Switzerland.

17.—*Cuba-Germany,* money-order postal convention ratified.

18.—*Sweden-United States,* consular convention ratified and proclaimed.

19.—*Turkey,* an irade approves Bagdad railway convention.

29.—*France-Germany,* civil procedure of judicial authority simplified.

—*Nicaragua-United States,* decree signed by President of Nicaragua appointing mixed commission to adjudicate claims against that government by citizens of the United States.

31.—*Uruguay-Vatican,* diplomatic relations suspended by Uruguay.

—*Bolivia-Peru,* protocol signed at Lima for the arbitration of difficulties; matters to be submitted to Hague, if necessary.

April

1.—*Germany-Great Britain,* treaty of Jan. 30, 1911, respecting extradition between German and British protectorates, ratified.

3.—*Great Britain-Japan,* treaty of commerce and navigation signed at London.

—*Great Britain-Zanzibar,* treaties of 1839 (Muscat) and of 1886 abrogated.

8.—*France-New Zealand,* exchange of post office money orders ratified.

15.—*France-Norway,* modification of declaration modifying admission of certain French products into Norway.

—*China,* the $50,000,000 loan signed at Pekin.

16.—*Greece-Roumania,* diplomatic relations resumed.

19.—*Great Britain-Honduras,* treaty of commerce and navigation extended to April 6, 1912.

May

2.—*Germany-Sweden,* a commercial treaty signed at Berlin.

5.—*Great Britain-Japan,* treaty of commerce and navigation ratified.

8.—*Great Britain-China,* agreement signed at Pekin regarding opium.

—*Great Britain-Mexico,* ratification of convention regarding telegraphic communication between Mexico and British Honduras.

9.—*Italy-Portugal,* commercial *modus vivendi* arranged by exchange of notes.

11. — *Bosnia - Herzogovina - Netherlands,* telegraphic money orders exchanged from this date.

13.—*Great Britain-Liberia,* ratifications of a treaty regarding boundary between Sierra Leone and Liberia.

16.—*Japan-Spain,* treaty of amity signed at Madrid.

21.—*Persia-Turkey,* agree that the Boundary Conference shall submit to the Hague Tribunal any points it can not settle.

23.—*Denmark-France,* arbitration convention continued till Jan. 1, 1912.

June

19.—*Portugal,* decree issued proclaiming monarchy abolished and a democratic republic established.

24.—*Germany-Japan,* commercial treaty signed at Berlin.

27.—*France-United States,* ratification of extradition treaty of Jan. 6, 1909.

29.—*Brazil-Spain,* arbitration convention of April 8, 1909, ratified.

July

1.—*United States-France,* French law promulgates extradition treaty of 1909.

—*United States-Ottoman Empire* establish parcels post through Austria-Hungary.

3.—*Chile-Italy,* treaty of commerce and navigation ratified.

5.—*Germany-Zanzibar,* treaty expires.

7.—*Great Britain-Japan,* Article 5 of the commercial treaty of July 16, 1894,

as regards Canada, prolonged for two years.

—*United States-Great Britain-Russia-Japan,* abolish pelagic seal fishing.

9.—*Austria-Portugal,* by a *modus vivendi* they grant each other a "most-favored nation" treatment.

10.—*United States-Salvador,* treaty of extradition ratified.

13.—*Great Britain-Japan,* agreement signed at London modifying and superseding the Anglo-Japanese Alliance Treaty of 1905.

17.—*Great Britain-Paraguay,* extradition treaty of 1908 in effect as to Canada.

26.—*United States-Brazil,* arbitration convention of 1909 ratified.

December

17.—*United States-Russia,* treaty of 1832 abrogated.*

INTERNATIONAL CONGRESSES, CELEBRATIONS AND EXPOSITIONS

Celebrations and Expositions

International Art Exposition. Rome, Italy, Sept. 23-Oct. 21.

International Automobile Exposition, Berlin, Oct. 12-22.

International Exhibition of Industries and Labor. Turin, Italy, May.

International Horticultural Exhibition. London, England, May 22-30.

International Hygienic Exposition. Dresden, Germany, May-October.

International Municipal Congress and Exposition. Chicago, Ill., Sept. 18-30.

International Rubber Exposition, London, June 24—July 14.

International Textile Industry Exhibition. Roubaix, France, May.

Centennial Celebration of Independence of Venezuela. Caracas, June 24-July 24.

Centennial Celebration of Independence of Paraguay. Asuncion, May 13-20.

Ground Breaking Ceremonies for the Panama-California Exposition of 1915. San Diego, Cal., July 19.

Ground Breaking Ceremonies for the Panama-Pacific Exposition of 1915, San Francisco, Oct. 14.

International Exhibition of Social Hygienics. Rome, Italy, September.

Fifth International Horse Show. Opened at London, England, June 12.

International Rubber Exhibition. London, England, June 24-July 14.

Universal Races Congress. University of London, July 26-29.

Meetings of Religious Bodies

International Sunday School Convention. San Francisco, Cal., June 20-27.

World's Missionary Exposition, Boston, Mass., April 24-May 20.

International Sunshine Society. New York City, May 18-20.

International Eucharist Congress. Madrid, Spain, June 25-29.

International (25th) Convention of the Christian Endeavor Societies. Atlantic City, N. J., July 6-12.

Scientific and Educational Congresses.

Fourth International Congress of Medicine. Cairo, Egypt, Feb. 22-26.

International Congress of Child Welfare. Washington, D. C., April 25-May 2.

Fourth International Congress of Philosophy. Boulogne, France, April 9-15.

International Plague Conference, Mukden, Asiatic Russia, April 3.

International Conference for the Suppression of the Opium Trade, opened at The Hague, Dec. 1.

Interparliamentary Union. Rome, Italy, October.

Seventh International Esperanto Congress. Antwerp, Belgium, Aug. 20-27.

International Congress on Applied Electricity. Turin, Italy, Sept. 9-20.

International Dairy Congress. Stockholm, Sweden, June 28-July 1.

International Congress on Tuberculosis. Rome, Italy, Sept. 24-30.

Lake Mohonk Conference on International Arbitration. Mohonk Lake, N. Y., May 24-26.

American Society of International Law, Fifth Annual Meeting. Washington, D. C., April 27-29.

International Congress of Music. Rome, Italy, April 3-8.

Fourth International Congress of Touring Associations. Lisbon, Portugal, May 12.

International Musical Congress. London, England, May 23-June 3.

International Association of Seismology (Annual Conference). Manchester, England, July 18-22.

Politico-Economic Meetings

Fifth International American Sanitary Conference. Santiago, Chile, Nov. 5-12.

South American International Postal Congress. Montevideo, Uruguay, Jan. 11-Feb. 2. *

The Bolivian Congress. Caracas, Venezuela, July 5-10. *

Third Central American (Internation-

al) Conference. Guatemala City, Jan. 1-15. *
International Cotton Congress. Barcelona, Spain, May 8-11.
International Congress of Industrial Property. Washington, D. C., May 15.
International Conference of Railroads and Railroad Transportation. Berne, Switzerland, May 16.
International Conference of Postal and Telegraph Employees. Paris, France, June 6.
International Congress of Textile Workers. Amsterdam, Holland, June 12-16.
First International Women Suffrage Congress. Stockholm, Sweden, June 12-17.
International Institute of Agriculture, Rome, Italy, May 14.
Fifth International Dairy Congress. Stockholm, Sweden, June 28-July 1.
International Congress of Naval Architects and Marine Engineers. London, England.
International Congress of Iron Metallurgy. Brussels, Belgium, July 5.
International Miners' Congress. London, England, July 25.
International Brewers' Congress. Chicago, Oct. 12-22.

The chronological record just given presents a *résumé* of events of the year 1911, in so far as they can be entered in such a form. Many of these events need no further notice than the mere statement of fact, although the student, if further details are required by him, can find them discussed in the general and specific literature bearing upon the subjects, and reference is therefore made at the end of this section to the most important authorities. There remain, however, several events which demand greater and more exact analysis. It seems best, in order to preserve a uniformity of treatment in that analysis, to maintain a geographical point of view, and to consider each question with reference to that political subdivision to which it is more especially pertinent.

AMERICA

UNITED STATES

With Mexico, re the Chamizal Boundary Dispute.—The tract in dispute comprises an area of about 600 acres between the channels of the Rio Grande as it ran in 1852 and the present channel, which at this point runs considerably farther to the south. The tract is physically a part of the city of El Paso, Texas, and about 6,000 of the 40,000 inhabitants of the town now make their home upon it. The land was claimed by both the United States and Mexico, but was (again) sent to an International Boundary Commission by virtue of a treaty of June 24, 1910. Each government had one commissioner, and a third was selected, a Canadian jurist, Eugene Lafleur, K. C., presiding. The American commissioner was Brig.-Gen. Anson Mills; the Mexican commissioner was Señor Don F. B. Puga. An agent and counsel for each government was also provided. Sittings were held at El Paso, or at Ciudad Juarez, across the river, in Mexico. The first session was held May 15, 1911, and the decision was handed down on June 15, 1911.

Certain important boundary provisions of previous treaties were decidedly modifying factors in the decision reached, as well as in the acceptance of it by the opposing commissioners. The Treaty of Guadalupe-Hidalgo provides that the boundary shall run "up the middle" of the Rio Grande, etc. The Gadsden Treaty contains similar provisions. The Boundary Convention of 1884 prescribes practically similar conditions, specifying the conclusions that are to be drawn from alterations effected by natural causes through slow and gradual erosion. The contention on behalf of Mexico was that a fixed and invariable line was established (the middle of the river); and that only slow and gradual erosion was to be considered. The United States maintained that the terms were relative, that in practical respects "slow and erosive changes" had taken place; and that the title belonged to the tract by prescription (denied by Mexico). Other details also were to influence the decision.

After examining the four points discussed, the presiding commissioner and the Mexican commissioner joined in the following award:

Wherefore the presiding commissioner and the Mexican commissioner, constituting a majority of the said commission, hereby award and declare that the international title to the portion of the Chamizal tract lying between the middle of the bed of the Rio Grande, as surveyed by Emory and Salazar in 1852, and the middle of the bed of the said river as it existed before the flood of 1864, is in the United States of America, and the international title to the balance of the said Chamizal tract is in the United States of Mexico.

The American commissioner filed a vigorous dissenting opinion from so much of the opinion and award "as assumes to segregate the Chamizal tract and to divide the parts so segregated between the two nations and . . . which holds that a portion of the Chamizal tract was not formed through slow and gradual erosion and deposit of alluvium within the terms of the treaty of 1884." The American commissioner maintains that the commission was without jurisdiction to divide the tract. The agent of the United States upon his own motion, subject to the consideration and action of his government, filed a protest against the decision and award on the ground that it amounted in various respects, set forth by him, to a "departure from the terms of submission"; because it was impossible of application; because it failed in certain respects to state the reasons upon which it was based as required by the terms of submission, and, finally, because of "essential error of law and fact."

It has not yet been reported whether or not the decision and award of this latest commission will be positively accepted by the United States and Mexico.

With Mexico, re the Protection of the Mexican Frontier and possible interference in case the revolution in Mexico seemed to turn into unrestrainable lawlessness. (See also IV, *American History*, and VI, *Latin America.*) On March 8 it was publicly announced in the newspapers that orders had been issued from the War Department for the mobilization, near the southern frontier, of a large part of the United States regular army available for active duty. About 30,000 troops were set in motion by these orders, being concentrated at San Antonio, Texas, where a camp was prepared for them. It was evident from the celerity with which the mobilization was accomplished that a lesson had been learned from the disasters of the Spanish-American war, and a noticeable improvement was manifest over the slowness of that time, but nevertheless European war critics, probably not always without prejudice, asserted that defects were still visible, and that in comparison with German and other maneuvers, the concentration on the frontier was too delayed. Militia from various parts of the country volunteered, but their services were not accepted. These military movements were the most extensive ever carried on in the United States during peace times; the explanation given was that the troops were moved "for the purpose of field instruction." The general opinion, however, voiced in both press and public utterances, was that the disturbed conditions in Mexico lay at the bottom of it. This latter reason was later admitted by authority, and it was stated that so much filibustering had gone on along the Mexican frontier, and so much smuggling of arms and men across the international border, that the United States government felt obliged to resort to active measures to stop that irresponsible conduct. Other causes had their influence as well. The desire to demonstrate to Europe that interference on the part of foreign powers would not be kindly received; the willingness to listen to complaints from the actual government of Mexico which had legitimate grounds for complaint in a few cases; the necessity of showing that American interests in Mexico must be protected, and the advantage of seizing the opportunity to exercise troops in active maneuvers close to those that would be demanded in times of real war, were factors. The value of keeping watch on the filibustering activities was proven by

the case of two men, Blatt and Converse, arrested by Mexican police on what was claimed to be Mexican soil, and in direct violation of neutrality laws, although United States citizens set up a counter claim that these men had been taken on American soil. The truth of the matter seems to be that their apprehension was accomplished on land in dispute (see Chamizal case *supra*), and would become a subject of diplomatic negotiation. In the end Blatt and Converse were released unharmed, after Madero had reached complete success in his revolutionary efforts. Naval vessels of the United States, despatched by the navy department—one on the east coast and a second on the west coast—to give greater force to the movement, were withdrawn in a short while, after a dignified protest from the Diaz government.

On April 14 President Taft warned the Mexican government and the insurgents that they must not endanger the lives of Americans by fighting near the border, but on April 17 both federal and revolutionary armies clashed at Agua Prieta, close to Douglas, Ariz., and several noncombatants were injured by stray bullets. The next day the Mexican government assured President Taft that fighting of that kind would be restricted. About this time a sensational newspaper story was given publicity to the effect that Mexico (Diaz) had formed an alliance by secret treaty with Japan, but immediate and categorical denials of this story were made by the Japanese ambassador at Washington and by the Japanese minister at Mexico City. It was officially denied by the Department of State and by the Senate Committee on Foreign Relations that the alleged Japanese treaty had anything to do with the movement of American troops. Ever since the mobilization and the maneuvers on the frontier, rumors persisted that the movement was only the beginning of a design to interfere, and this was fostered by persons residing in Mexico itself, who clamored for such means to restore what they asserted would be peace within the country, however little they might reckon on international consequences afterwards, and also by hot-headed politicians who liked to advocate the advantage to result from such action. However, President Taft and his cabinet gave no expression that might be construed as indicative of an intention to intervene, and the President repeatedly declared that only on the formal direction of Congress would he order troops across the border. It should be observed that from the Mexican side not a few Mexicans themselves, no matter to which party they might belong, would eagerly foment the illogical desire for interference, because they well knew that a certain anti-Americanism in Mexico could thereby be fanned into a steady flame, and that consequently all factions, revolutionary or governmental, could be united in a common cause, and an outside enemy be manufactured against which the entire country would take arms.

The reports of military interference had become so persistent, however, that, on May 12, Secretary Knox sent to Ambassador Wilson at Mexico the following instructions:

> You are authorized to deny, officially, through the local press and otherwise, as under instructions to do so, all foolish stories of intervention, than which nothing could be further from the intentions of the Government of the United States, which has the sincerest friendship for Mexico and the Mexican people, to whom it hopes will soon return the blessings of peace; which is not concerned with Mexico's internal political affairs, and which demands nothing but the respect and protection of American property and life in a neighboring republic. You will use the language of this instruction.

The moderate and friendly way in which the Mexican situation had been handled by the Department of State and the excellent impression made by the statements of President Taft, as well as the good behavior of our army, reacted favorably on all classes of the Mexican people. Madero declared that not one American dollar had helped his cause. Ex-President Diaz said, on reaching Europe, that he had no feeling against

the United States, whose conduct had been dignified and generous, indicating a desire to seek the highest good for all. In June the troops massed upon the Mexican frontier began to be withdrawn, as disturbances there had largely ceased. This continued during the summer and was practically completed by the time the elections in Mexico had taken place. The movement spoke creditably for both nations and peoples. One lesson seems to have been learned by the War Department, namely that the small and scattered army posts throughout the West had served their purpose and should be abandoned, but that the greater and better equipped posts were far more suited to the activities of a modern army.

With Canada, re the Reciprocity Treaty.—(See also IV, *Reciprocity;* VI, *Canada;* and XIV, *Public Finance.*) The text of a reciprocity agreement with Canada was submitted to Congress on Jan. 26, with a special message from President Taft urging its prompt acceptance. On the same day the Canadian Minister of Finance laid the agreement before the Dominion House of Commons. A bill embodying these provisions of the program was immediately introduced in the House of Representatives by Congressman McCall of Massachusetts, favorably reported by the Ways and Means Committee Feb. 10, and passed by the House Feb. 14, with only one amendment clearing up the section on wood pulp. On Feb. 15 it was referred to the Foreign Relations Committee of the Senate and turned over to the Finance Committee. Feb. 7 the Canadian government caucus decided in its favor, it was presented to the House of Commons (Canadian) as an amendment to the Customs Act, but the Opposition disapproved. It was expected, however, that the Canadian government would carry the measure through, by its normal majority.

The United States, Canada and Great Britain were all very vitally interested in this reciprocity bill, and there was much at stake. It affected the consumers in both the United States and Canada, as it made several articles of daily use cheaper; in Great Britain it was studied rather more from the political standpoint, its success or failure promising to indicate the attitude of Canada toward the Mother Country and the determination therefore to act independently of the colonial traditions of England. In the United States opposition came from the makers of print paper, from New England fishermen, from the lumbermen, and from a widely scattered class of farmers. Both administrations—American and Canadian—were in favor of it. In England much questioning was aroused, both in Parliament and without, whether some sort of interference with Canada might not be undertaken. One great fear in Canada was that the United States purposed by this treaty to foment the idea of annexation, and an unfortunate remark of Speaker Clark (made later) increased the uncertainty. Secretary of State Knox felt obliged to deny officially that any such intention existed, and asserted that Canada was well recognized as a North American unit, the autonomy of which would always be preserved, but that in any great world movement involving both the United States and Canada, the two would, as a matter of course, act in concert to defend their common rights.

What seemed at first to be a most natural and an easily passable advance toward more intimate trade relations based on geographical advantages to both countries, became, before the summer was over and after the interjection of many problems not at all intended by President Taft when he initiated the program, a most complicated and far-reaching attempt to disturb the political welfare of the Dominion. The bill became very much more a political measure than an economic one. In the United States the embarrassment arose from the fact that the President had to some extent the support of the Democrats and the opposition of many Republicans; in Canada it lost its commercial significance, and was made the basis of a party disagreement which threw the question before the voters in a general election. It is well, therefore, to give a synopsis of the bill in its own words:

(Public—No. 3)

An Act to promote the reciprocal trade relations with the Dominion of Canada, and for other purposes.

Be it enacted by the Senate and House of the United States of America in Congress assembled, That there shall be levied, collected and paid upon the articles hereinafter enumerated, the growth, product or manufacture of the Dominion of Canada, when imported therefrom into the United States or any of its possessions (except the Philippine Islands and the Islands of Guam and Tutuila), in lieu of the duties now levied, collected, and paid, the following duties, namely:

Fresh meats . . . . . or refrigerated meats excepting game; bacon and hams, not in tins or jars; meats of all kinds, dried, smoked, etc., not otherwise provided for: one and one-fourth cents per pound.

Canned meats and poultry, extract of meat, fluid or not: 20 per cent. *ad valorem.*

Lard and compounds thereof, cottolene and cotton stearine, and animal stearine: one and one-fourth cents per lb.

Tallow: 40 cents per 100 lb.

Egg yolk, and albumen, blood albumen: seven and one-half per cent. *ad valorem.*

Fish (except shellfish) by whatever name known, packed in oil, in tin boxes or cans, including the weight of the package: (a) when weighing over 20 oz. up to 36 oz. each, 5 cents per package; (b) when weighing over 12 and not over 20 oz. each, 4 cents per package; (c) weighing 12 oz. each or less, 2 cents per package; (d) weighing 36 oz. each or more, or when packed in oil, in bottles, jars, or kegs, 30 per cent. *ad valorem.*

Tomatoes and other vegetables, in cans or other air-tight packages and including the weight of the package: one and one-fourth cents per lb.

Wheat flour and semolina, and rye flour, 50 cents per bbl. of 196 lb.

Oatmeal and rolled oats, including the weight of paper covering: 50 cents per 100 lb. Corn meal: 12½ cents per 100 lb. Barley malt: 45 cents per 100 lb. Barley, pot, pearled, or patent: ½ cent per lb. Buckwheat flour or meal: ½ cent per lb. Split peas, dried: 7½ cents per bus. of 60 lb. Prepared cereal foods, not otherwise provided for: 17½ per cent. *ad valorem.* Bran, middlings, and other offals of grain used for animal foods: 12½ cents per 100 lb. Macaroni and vermicelli: one cent per lb.

Lower rates of duty were fixed also upon biscuits and baked articles in the shape of confectionery, and candy, 32½ per cent. *ad valorem;* maple sugar, one cent per lb.; pickles, sauces, cherry, prune and other fruit juices, non-alcoholic; mineral waters, essential oils, grapevines and fruit bushes, at varying specific or *ad valorem* duties; farm wagons and other farm implements; portable engines and similar agricultural tools; grindstones, and building or monumental stones; roofing slate, and paving blocks. Asbestos; printing ink; cutlery; bells; plumbing fixtures; brass band instruments; clocks, watches and appliances; printers' cases and cabinets, and wood floors; canoes, and wooden (not motor) boats; antiseptic dressings and other surgical appliances;—the list continuing through plate glass, motor vehicles, digestors for the manufacture of wood pulp, wooden cases and leather goods, aluminum, laths, shingles, sawed boards, iron ore, and coal slack.

Provided, That the duties above enumerated shall take effect whenever the President of the United States shall have satisfactory evidence and shall make proclamation that on the articles hereinafter enumerated, the growth, product or manufacture of the United States, or any of its possessions (except the islands of Guam and Tutuila), when imported therefrom into the Dominion of Canada, duties not in excess of the following are imposed, namely:

In the list given the articles of the foregoing list are repeated word for word, with a similar rate of duty, the object being to make the tariff into either the United States or into Canada exactly the same, and somewhat lower than the general tariffs of both countries.

The free lists, applicable to both countries, and exactly alike, include live animals, poultry, grains, hay and straw, fruits—fresh and dried, vegetables, dairy products, seeds, fish and fish products, salt, mineral waters, timber and lumber, minerals, some chemicals, metals and manufactures thereof, barbed fencing wire, coke, and allied products. Sec. 2 gives pulp of wood, news print paper, and other paper manufactured

from wood pulp, being the product of Canada, not including wall paper, and valued at not more than four cents per pound, to be admitted duty free into the United States, on the condition that no export duty or tax of any sort be levied against them. Sec. 3 provides that the President of the United States is authorized to negotiate trade agreements with Canada looking toward freer trade relations, provided, however, that said agreements shall be submitted to the Congress of the United States for ratification or rejection.

To quote the entire treaty in full would demand too much space, and lead to confusion, without minute explanations, but the items given and the variety of the articles, indicate the scope of the treaty and the ideas of the trade expansion hoped to be promoted thereby.

In the United States, the treaty is still valid, and must remain so, until Congress removes it, or Canada decleares herself ready to take up the subject again and to act upon it favorably.

On April 5 President Taft sent a message to the Special Congress just convened urging approval of the Canadian reciprocity agreement, and on April 21 the bill passed the House by vote of 266 to 89. In the Senate debate was longer, but the bill passed, unamended, July 22, by vote of 53 to 27. On July 26 President Taft signed it. In Canada during July continued obstruction to the treaty led to a decision to dissolve Parliament and to hold a general election for the people to decide the matter; this election was set for Sept. 21. Much feeling for and against the principle was expressed, Premier Laurier upholding it and the opposition leader, R. L. Borden, denouncing it. When the vote was taken the Liberals, and hence the reciprocity treaty, were defeated by a large majority, and Mr. Borden was declared Premier of the Dominion. The question seems to have resolved itself into the political one of fear of absorption while the economic side was almost ignored. The best analysis of the problem and its solution was given by the newly elected Premier, in his message to the American people (*Review of Reviews*, Nov., 1911, page 554).

In 1879 Canada placed upon her statute book a standing offer of reciprocity, which remained open to the United States for 18 years, when it was repealed by the government of Sir Wilfrid Laurier. The United States always declined to entertain this standing offer and we never questioned their absolute right to take that course. In the meantime Canada had entered upon a policy which involved the development of her natural resources, the growth of her industries, and the preservation of her home market. Eight years ago I declared in the House of Commons that a factory in Canada was worth as much to our Empire as a factory in Yorkshire. Our fiscal autonomy involving our complete control of our tariff had been finally completed and secured in 1879 and it will never be relinquished. The reciprocity compact proposed by the late government would have interfered with Canada's complete control of its own fiscal system, and in many important respects would have constituted a reversal of the policy which this country has pursued for many years. Moreover, the interlocking of our tariff with that of any other country is undesirable from the standpoint of our fiscal autonomy. It should not be forgotten that similar arrangements made between the British colonies in South Africa have proved unsatisfactory and irritating and in the end they had to be abandoned. During the recent elections the opinion prevailed in Canada that in the interests of friendly relations it would be far better that each country should be absolutely free to frame and modify its own tariffs in what it conceived to be the best interests of its people. We also consider that a tariff which must be accepted or rejected as a whole and which cannot be amended in any respect to meet the most obvious injustice, is an . . . . undesirable form of legislation. . . . . The recent decision of the Canadian people was not induced by any spirit of unfriendliness to the United States. Canada is an autonomous nation within the British Empire and is inseparably united to that Empire by ties of kinship, sentiment, fealty, history, tradition, and by the character of its institutions. By like ties of kinship, by constant . . . . . intercourse, by proximity and by mutual respect . . . . this country is associated with the United States. Canada's voice shall always be for harmony . . . . and I trust that the anniversary

of one hundred years of peace will be commemorated in the two countries with a solemn sense of national responsibility, and that each will accomplish its destiny under the splendid inspiration of enduring and increasing friendship and good will.

Canada's sober second thought, at the end of the year, seemed to be that the reciprocity idea might still be very much alive.

Arbitration with Great Britain and France.—On June 28 the State Department and the British Foreign Office announced that an Anglo-American arbitration had been agreed upon. Negotiations to that end had been begun between Secretary Knox and Ambassador Bryce on May 17. At the same time a copy of the proposal was handed to the French ambassador, Dr. Jusserand. It was intimated that the German Foreign Office would take up the matter of unlimited arbitration on the basis of this treaty. On Aug. 3 the two general arbitration treaties — between the United States and Great Britain, and between the United States and France—were signed at Washington by Secretary Knox, Ambassador Bryce signing there for Great Britain, and Ambassador Jusserand at Paris for France. The two documents are identical except for such details as were necessarily different for application to the particular country. On Aug. 12 Mr. Lodge presented these treaties to the Senate with a message from the President dated Aug. 4. They are designated, as of the 62nd Congress, 1st Session, *Arbitration with Great Britain, Document No. 91;* and *Arbitration with France, Document No. 94.* They purpose to extend the scope and obligation of the policy of arbitration hitherto existing between the two countries, so as to exclude certain exceptions contained in those treaties and to provide means for the peaceful solution of all questions of difference which it shall be found impossible in future to settle by diplomacy. As the language used in both treaties is so important, a but slightly abbreviated copy of the treaty with Great Britain is given, language applicable to France to be substituted wherever indicated:

ARBITRATION WITH GREAT BRITAIN

The United States of America and His Majesty the King of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, Emperor of India, being equally desirous of perpetuating the peace, which has happily existed between the two nations, as established in 1814 by the Treaty of Ghent, which has never since been interrupted by an appeal to arms, and which has been confirmed and strengthened in recent years by a number of treaties whereby pending controversies have been adjusted by agreement or settled by arbitration or otherwise provided for; so that now for the first time there are no important questions of difference outstanding between them, and being resolved that no future differences shall be a cause of hostilities between them or interrupt their good relations and friendship;

The High Contracting Parties have, therefore, determined, in furtherance of these ends, to conclude a treaty extending the scope and obligations of the policy of arbitration adopted in their present arbitration treaty of April 4, 1908, so as to exclude certain exceptions contained in that treaty and to provide means for the peaceful solution of all questions of difference which it shall be found impossible in future to settle by diplomacy, and for that purpose they have appointed as their respective Plenipotentiaries:

The President of the United States of America, the Honorable Philander C. Knox, Secretary of State of the United States;

and

His Britannic Majesty, the Right Honorable James Bryce, O. M., his Ambassador Extraordinary and Plenipotentiary at Washington;

Who, having communicated to one another their full powers, found in good and due form, have agreed upon the following articles:

Article I.

All differences hereafter arising between the High Contracting Parties, which it has not been possible to adjust by diplomacy, relating to international matters in which the High Contracting Parties are concerned by virtue of a claim of right made by one against the other under treaty or otherwise, and which are justiciable in their nature by reason of being susceptible of decision by the application of the principles of law or equity, shall be submitted to the Permanent Court of Arbitration established at The Hague

by the Convention of Oct. 18, 1907, or to some other arbitral tribunal as may be decided in each case by special agreement, which special agreement shall provide for the organization of such tribunal if necessary, define the scope of the powers of the arbitrators, the question or questions at issue, and settle the term of reference and the procedure thereunder.

The provisions of Articles 37 to 90, inclusive, of the Convention of the Pacific Settlement of International Disputes concluded at the Second Peace Conference at The Hague on the 18th October, 1907, so far as applicable, and unless they are inconsistent with or modified by the provisions of the special agreement to be concluded in each case, and excepting Articles 53 and 54 of such Convention, shall govern the arbitration proceedings to be taken under the Treaty.

The special agreement in each case shall be made on the part of the United States by the President of the United States, by and with the advice and consent of the Senate thereof, His Majesty's Government reserving the right before concluding a special agreement in any manner affecting the interests of a self-governing dominion of the British Empire to obtain the concurrence therein of the government of that dominion.

Such agreements shall be binding when confirmed by the two Governments by an exchange of notes.

Article II.

The High Contracting Parties further agree to institute as occasion arises, and as hereinafter provided, a Joint High Commission of Inquiry to which, upon the request of either Party, shall be referred for impartial and conscientious investigation any controversy between the Parties within the scope of Article I, before such controversy has been submitted to arbitration, and also any other controversy hereafter arising between them even if they are not agreed that it falls within the scope of Article I; provided, however, that such reference may be postponed until the expiration of one year after the date of the formal request therefor, in order to afford an opportunity for diplomatic discussion and adjustment of the questions in controversy, if either Party desires such postponement.

Whenever a question or matter of difference is referred to the joint High Commission of Inquiry, as herein provided, each of the High Contracting Parties shall designate three of its nationals to act as members of the Commission of Inquiry for the purpose of such reference; or the Commission may be otherwise constituted in any particular case by the terms of reference, the membership of the Commission and the terms of reference to be determined in each case by an exchange of notes.

The provisions of Articles 9 to 36, inclusive, of the Convention for the Pacific Settlement of International Disputes concluded at The Hague on the 18th October, 1907, so far as applicable and unless they are inconsistent with the provisions of this Treaty, or are modified by the terms of reference agreed upon in any particular case, shall govern the organization and procedure of the Commission.

Article III.

The Joint High Commission of Inquiry, instituted in each case as provided for in Article II, is authorized to examine into and report upon the particular questions or matters referred to it, for the purpose of facilitating the solution of disputes by elucidating the facts, and to define the issues presented by such questions, and also to include in its report such recommendations and conclusions as may be appropriate.

The reports of the Commission shall not be regarded as decisions of the questions or matters so submitted either on the facts or on the law and shall in no way have the character of an arbitral reward.

It is further agreed, however, that in cases in which the Parties disagree, as to whether or not a difference is subject to arbitration under Article I of this Treaty, that question shall be submitted to the Joint High Commission of Inquiry; and if all or all but one of the members of the Commission agree and report that such difference is within the scope of Article I, it shall be referred to arbitration in accordance with the provisions of this Treaty.

Article IV.

The Commission shall have power to administer oaths to witnesses and take evidence on oath whenever deemed necessary in any proceeding, or inquiry, or matter within its jurisdiction under this Treaty; and the High Contracting Parties agree to adopt such legislation as may be appropriate and necessary to give the Commission the powers above mentioned, and to provide for the issue of subpœnas and for compelling attendance of witnesses in the proceedings before the Commission.

On the inquiry both sides must be

heard, and each Party is entitled to appoint an Agent, whose duty it shall be to represent his Government before the Commission and to present to the Commission, either personally or through counsel retained for that purpose, such evidence and arguments as he may deem necessary and appropriate for the information of the Commission.

Article V.

The Commission shall meet whenever called upon to make an examination and report under the terms of this Treaty, and the Commission may fix such times and places for its meetings as may be necessary, subject at all times to special call or direction of the two Governments. Each Commissioner, upon the first joint meeting of the Commission after his appointment, shall, before proceeding with the work of the Commission, make and subscribe a solemn declaration in writing that he will faithfully and impartially perform the duties imposed upon him under this Treaty, and such declaration shall be entered on the records of the proceedings of the Commission.

The United States and British sections of the Commission may each appoint a secretary, and these shall act as joint secretaries of the Commission at its joint sessions, and the Commission may employ experts and clerical assistants from time to time as it may deem advisable. The salaries and personal expenses of the Commission and of the agents and counsel and of the secretaries shall be paid by their respective Governments and all reasonable and necessary joint expenses of the Commission incurred by it shall be paid in equal moities by the High Contracting Parties.

Article VI.

This Treaty shall supersede the Arbitration Treaty concluded between the High Contracting Parties on April 4, 1908, but all agreements, awards, and proceedings under that Treaty shall continue in force and effect and this Treaty shall not affect in any way the provisions of the Treaty of January 11, 1909, relating to questions arising between the United States and the Dominion of Canada.

Article VII.

The present Treaty shall be ratified by the President of the United States of America, by and with the advice and consent of the Senate thereof, and by His Britannic Majesty. The ratifications shall be exchanged at Washington as soon as possible and the Treaty shall take effect on the date of the exchange of its ratifications. It shall thereafter remain in force continuously unless and until terminated by twenty-four months' written notice given by either High Contracting Party to the other.

(Signed in duplicate and seals affixed. Done at Washington, August 3, 1911.)

Philander C. Knox.
James Bryce.

These treaties aroused a noticeable variance of opinion both in the United States and abroad. In the Senate it was given out that opposition would be raised against them, especially as the provision for the High Court of Inquiry would infringe against the treaty-making power of the Senate, and might sometime commit this country to submit to arbitration points which are and must be regarded as essentially American and never under any circumstances to be exposed to the judgment of other powers. The majority report of the committee on foreign relations sent the treaties back to the Senate, with certain amendments, after the acceptance of which that committee recommended their adoption. The matters under the policy called the Monroe Doctrine, and under the regulations governing immigration into the United States; the tacit understanding that similar treaties would have to be made with other nations calling upon the United States to do so; are questions which the Senate must not relinquish. Therefore the reference in the third clause of Article III ought, in the opinion of that committee, to be left out. This was signed by Henry Cabot Lodge, Chairman. The minority report did not consider that the pending treaties involved any abandonment of the constitutional powers of the Senate. "Justiciable" cases, which seemed to be the crux of the treaties' superiority over the Senate, must still be decided first by that body before they reach the High Court of Inquiry. The only change this committee recommended was the insertion of a clause to the effect that "the treaty does not authorize the submission to arbitration of any question which depends upon or in-

volves the maintenance of the traditional attitude of the United States concerning American questions or other purely governmental policy." This was signed by S. M. Cullom and Elihu Root (Aug. 18). On Aug. 31 President Taft addressed the American Bar Association, Boston, advocating the adoption of the treaties (even including the clause to which the Senate objected), for the very reason that that clause would bind the nation to arbitration before there was anything to arbitrate, so that when friction arose hot heads could not claim that such a particular could not be submitted to arbitration.

Ex-President Roosevelt opposed the treaties, because they did not leave the national conscience the choice as to the absolute justice of any particular case that might arise. He accepted most earnestly the principles of arbitration, but refused to acknowledge that every question could or should be arbitrable.

On the other hand, in England, Sir Edward Grey, the British Foreign Minister, assumed that "if two of the greatest nations of the world agreed that under no circumstances were they going to war, it would have a beneficent effect. This would probably lead to their following with an agreement to join each other in any case where one of them had a quarrel with a third nation which had refused to arbitrate," and such a union would go far to insure the peace of the world. On the continent of Europe much interest and discussion was aroused. France was enthusiastic for the principle. The German Chancellor, von Bethmann-Hollweg, spoke in the Reichstag approving the principle in general but avowing that if it was expected to lead to general disarmament, Germany could not favor it. "Disarmament is a dream, an insoluble problem, so long as men are men." He implied that might was still and would continue to be the ultimate test of right. The range of arbitration appears to be in doubt in many minds, and the fact needs clarifying that the range is constantly broadening. Sir John Macdonald has offered facts which may be considered hopeful in this connection. He instances the improvement in the machinery of arbitration, argument being on a judicial basis, and not subject to chance, as was the case formerly; treaties are prepared with greater care with this end in view; cases for arbitration are much better prepared and submitted; and there is ground to believe that the popularity of arbitration is a permanent phase in organized society.

While it was not expected that definite action was to be taken before the meeting of Congress in December, and probably not until some time in 1912, yet this great step toward an agreement to submit every possible question of difference which may arise between the contracting nations, to peaceful arbitration, aroused great and continued discussion among the people of the United States. On the whole, it may be assumed that a majority of the people are in favor of accepting the treaties, as a proof that the United States is the first nation to acknowledge the possibility of settling by argument alone all disagreements touching international relations.

The Honduran Loan and the Nicaraguan Loan Convention.—On Jan. 1, 1911, diplomatic relations were renewed by the State Department with Nicaragua, after a pause since Dec. 1, 1909. Thus peace was assumed to exist in the two Republics of Honduras and Nicaragua (see VI, *Latin America*). President Taft, on Jan. 26, sent to the Senate a special message (made public Aug. 5) in which he said:

> Besides the consideration of propriety . . . . and interest making the arrangement with Honduras . . . . mutually advantageous, its wisdom . . . . in the direction of . . . . international policy is to be borne in mind. Honduras is not alone in financial embarrassment. . . . . Within a year past, Guatemala has sought the friendly counsel of the United States regarding . . . . a foreign loan, and . . . . Nicaragua will ask the aid of the United States in . . . . a readjustment of its debts. . . . . The convention now laid before the Senate . . . . now stands binding upon . . . . the United States and Honduras, only in respect to a loan contract . . . . which shall be finally found satisfactory by both Governments . . . . The contract . . . .

under negotiation with American bankers, must finally pass the scrutiny of the Department of State, and then be submitted to the Senate . . . . for consideration. I commend . . . . the convention to the favorable action of the Senate.

President Taft sent to the Senate June 8 (made public Aug. 5) much the same message concerning Nicaragua and the proposed loan by American bankers to that Republic, commending it, as well as the already mentioned Honduran loan, for ratification. June 12 President Adolfo Diaz, of Nicaragua, approved the proposed loan. Honduras appears not to have taken complete official action on the matter. The Senate of the United States adjourned without ratifying these negotiations of the Department of State, but in all probability they will come up for discussion during the winter session. Oct. 13, at Sacramento, Cal., President Taft again, before the public, advocated the ratification of these loan treaties, asserting that their existing debts would be settled thereby, and peace and prosperity attained. He compared the results obtained in the Dominican Republic with what could be expected in Central America. As these treaties may play a very important part in the future relations with Latin America, it is best to give them as full as possible, so that judgment may be passed on them directly, and not distorted by "muck-raking journals," as President Taft feared might be the case if unexplained.

After a preamble (almost alike in words, differing only by the use of Honduras for Nicaragua when necessary), in which each country indicates the desirability of coöperation on the part of the United States for the refunding of its debt and the placing of its finances and administration upon a sound and stable basis with a view to meeting its foreign obligations, and to securing the tranquility, prosperity and progress of the country, and in which the United States, animated by a desire to promote the peace and prosperous development of all the Central American countries, . . . the two Governments being convinced that some contract should be negotiated and concluded between Nicaragua (Honduras) and some competent and reliable American banking group, said contract to afford a beneficial, just and equitable accomplishment of the purposes in question, . . . plenipotentiaries are named—the President of the United States of America, Philander C. Knox, Secretary of State of the United States; and the President of Nicaragua, Dr. Salvador Castrillo, junior, Envoy Extraordinary and Minister Plenipotentiary of Nicaragua, the President of Honduras, Juan E. Paredes, Envoy Extraordinary and Minister Plenipotentiary of Honduras on special mission,—who sign the following:

Article I.

The Government of Nicaragua (Honduras) undertakes to make and negotiate a contract providing for the refunding of its present internal and external debt and the adjustment and settlement of unliquidated claims, for the placing of its finances upon a sound and stable basis, and for the future development of the natural and economic resources of that country. The Governments of the United States and Nicaragua (Honduras) will take due note of all the provisions of the said contract when made, and will consult, in case of any difficulties, with a view to the faithful execution of the provisions of said contract, in order that all the benefits to Nicaragua (Honduras) and the security of the loan may at the same time be assured.

Article II.

The loan which shall be made by the Government of Nicaragua (Honduras) pursuant to the above undertaking shall be secured upon the customs of Nicaragua (Honduras) and the Government of Nicaragua (Honduras) agrees not to alter the import or export customs duties, or other charges affecting the entry, exit, or transit of goods, during the existence of the loan under the said contract, without consultation and agreement with the Government of the United States.

Article III.

A full and detailed statement of the operations under this contract shall be submitted by the fiscal agent of the loan to the Department of State of the United States and to the minister of finance of the Government of Nicara-

gua (Honduras) at the expiration of each twelve months, and at such other times as may be requested by either of the two Governments.

Article IV.

The Government of Nicaragua (Honduras), so long as the loan exists, will appoint from a list of names to be presented to it by the fiscal agent of the loan and approved by the President of the United States of America, a collector general of customs, who shall administer the customs in accordance with the contract securing said loan and will give this official full protection in the exercise of his functions. The Government of the United States will in turn afford such protection as it may find requisite.

Article V.

This convention shall be ratified and the ratifications hereof shall be exchanged at Managua (Tegucigalpa) as soon as possible.

In faith whereof the respective plenipotentiaries have signed the present convention in the English and Spanish languages and have hereunto affixed their seals.

With Germany.—During the year a crisis was reached in the matter of potash purchases by dealers in the United States, who are obliged to secure their supplies of the chemical (for fertilizer) from Germany, as the best and practically the only deposits worked are in Germany. On June 7 the American potash interests notified the German mines that no deliveries would be accepted which are subject to the super-contingent tax. The controversy became a matter of international relations between the Department of State and the German Foreign Office. But the potash question needs explanation before the question at issue can be understood. The agricultural industry of the United States is beginning to depend upon fertilizer to keep up the required soil activity. There are three elements of soil nutrition—phosphates, of which this country has abundance; nitrates, much of which comes from Chile, although the monopoly is not absolute; and potash, of which Germany holds a monopoly. The deposits are found in a region in Saxony, although Austria produces some of the mineral. Of the $35,000,000 and more of Germany's annual export, about one-sixth is taken by the United States; more could be mined, but it has been thought best to restrict the output so as to maintain prices at a very profitable level. In this respect, the business in Germany is an absolute monopoly, and the mining companies are encouraged in their course by the German government. In 1884 a syndicate was formed to regulate the sale of potash. On June 30, 1909, the syndicate was dissolved, and then contracts were made between some American consumers and some producers to obtain potash at about 30 per cent. less than old syndicate prices. Other producers were not willing to lose control of the American market, and therefore the syndicate was reorganized and prices thereby maintained. The American tariff law was passed in 1909, containing the maximum and minimum schedules, which might modify Germany's trust prices to the outside world, and as Germany—a partner in the trust—wanted minimum rates, assurances were given that nothing would be done to invalidate existing contracts. Shortly afterward (May 10, 1910) Germany adopted legislation by which, in a technical way, without seeming to violate the contracts, prices would be almost 100 per cent. higher than before. The American consumers who had advantageous contracts for a term of years, protested that in fact these contracts were unfulfilled and the German government was responsible for the violation. Much negotiation was carried on through Ambassador Hill, who finally resigned. In the long run it is very probable that the German syndicate supported by the Government will adjust the matter on an equable basis. Meanwhile a strong incentive has been given to investigating all possible sources of potash in the United States in order to free the American farmer from dependence on foreign supply.

The Abrogation of the Russian Treaty.—The treaty of 1832 between the United States and Russia contains the following article:

There shall be between the territories of the high contracting parties a

reciprocal liberty of commerce and navigation. The inhabitants of their respective states shall mutually have liberty to enter the ports, places, and rivers of the territories of each party wherever foreign commerce is permitted. They shall be at liberty to sojourn and reside in all parts whatsoever of said territories in order to attend to their affairs, and they shall enjoy to that effect the same security and protection as natives of the country wherein they reside, on condition of their submitting to the laws and ordinances there prevailing, and particularly to the regulations in force concerning commerce.

This clause Russia has persistently violated. In accordance with her policy not to admit Jews within her territories, she has refused to recognize passports presented by American citizens of the Jewish faith. Early in 1911 an agitation for the abrogation of the treaty was begun by leading Jewish citizens, which rapidly enlisted the support of all classes and creeds. (See XXXIII, *Judaism.*) Before the assembling of Congress in December, diplomatic negotiations had been entered into, which President Taft hoped would result in a settlement of the difficulty before the end of the year. Congress, however, demanded action, and on Dec. 13 the House passed with but one dissenting vote the Sulzer resolution of abrogation (see IV, *American History*), which declared Russia's violation of the treaty of 1832 in most emphatic language. In an informal conference the Russian Ambassador, George Bakhmetieff, warned President Taft that if the Sulzer resolution was approved, Russia would consider its form insulting. Before the Senate had an opportunity to vote on the resolution, therefore, President Taft, on Dec. 17, transmitted to Russia, through Ambassador Guild, the stipulated one year's notice of abrogation. His action was ratified by the Senate on Dec. 19, and on the following day by the House.

Russia's attitude throughout showed no inclination to recede from her position, that since she does not give her own Jewish citizens the right of unrestricted travel, she is under no obligation to extend it to foreigners. The abrogation of the treaty caused some excitement in the Duma where commercial reprisals were advocated, but nothing had occurred up to the end of the year to indicate that friendly relations were likely to be impaired. The negotiation of a new treaty will be taken up when a favorable opportunity offers.

Senator Root, speaking in favor of the ratification of the abrogation in the Senate on Dec. 19, drew attention to the fact that the Russian treaty of 1832 is the only treaty to which the United States is now a party which maintains the doctrine of indefeasible allegiance. One of its clauses reads:

> This article shall not derogate in any manner from the force of the laws already published, or which may hereafter be published by his Majesty the Emperor of all the Russias, to prevent the emigration of his subjects.

Russia is the only country which refuses to countenance the modern theory that the right of emigration and the right of an individual to change his nationality are inalienable rights pertaining to every citizen. On this account alone, in Senator Root's opinion, the abrogation of the treaty was demanded.

With Japan.—On Feb. 21, there was signed at Washington the new Japanese treaty, with the significant fact that it omitted all mention concerning regulation of the migration of the people of one country to the other. It is called a treaty of commerce and navigation between the United States and Japan. It negatives in Article III the exercise of extra-territorial functions of consular officers, thus removing the limitation upon the independence and equality of Japan which appeared in the original text of the treaty of 1894 (which this supersedes) until modified by the operation of Article XVIII, which withdraws from consuls stationed in Japan the special privileges and immunities which consular officers enjoy in countries where extra-territoriality obtains. Two noteworthy features accompany this treaty. One, a protocol, states that: "The Government of the United States of America and the Government of Japan have . . . agreed upon the following stipulation in regard to

Article V (of this treaty) to replace on July 17, 1911, the treaty of Nov. 22, 1894: Pending the conclusion of a treaty relating to tariff, the provisions relating to tariff in the treaty of Nov. 22, 1894, shall be maintained," which implies an understanding to adjust a tariff treaty as soon as possible. The second feature is a declaration, from the Imperial Japanese Embassy, Washington, that: "In proceeding this day to the signature of the Treaty (etc.) . . . the Japanese Ambassador in Washington, duly authorized by his Government, has the honor to declare that the Imperial Japanese Government are fully prepared to maintain with equal effectiveness the limitation and control which they have for the past three years exercised in regulation of the emigration of laborers to the United States," which implies that no further diplomatic negotiations need be carried on concerning that matter.

In carrying to an actual conclusion a treaty of this nature, Japan assumes a position of equality among the world powers, and must therefore be recognized as such, and this treaty with the United States, the first of its kind thus signed, can be used by Japan as an example of what that government is willing in the future to sign with other governments.

It has especial significance that during the visit of Admiral Togo to the United States as the guest of the nation, President Taft, addressing him informally, suggested that a treaty of arbitration similar to those at that time under consideration between the United States, Great Britain and France, might be undertaken also with Japan, and that Admiral Togo seemed to give approval to the idea.

With China.—On May 20, 1911, the $30,000,000 Hukuang railway loan for the construction of railways in Hunan and Hupei provinces, China, was signed at Peking by American, British, French and German bankers. (See VI, *China.*) The Chinese government first applied to the United States because this country was interested in reform, and Secretary Knox advanced American prestige by securing participation in the loan. The assertion that European powers had precedence was controverted, and finally the United States made use of its right to participate on equal terms with the other powers. President Taft said, in his second annual message to Congress, that "the policy of this government . . . has been directed by a desire to make the use of American capital in the development of China an instrument in the promotion of China's welfare and material prosperity, without prejudice to her legitimate rights as an independent political power." The actual application of this loan was, however, disturbed by the revolt in China during the latter half of the year (which see *infra*).

With Cuba, Dominican Republic and Haiti, and with Central America.—Apart from the great international movement involved by the proposed financial treaties between the United States, Honduras and Nicaragua, the relations with these Republics remained harmonious. The government felt impelled at one time to deny any thought of interference in the internal affairs of Cuba; it was instrumental in inducing Haiti and the Dominican Republic to submit their boundary dispute to arbitration, and joined with other powers in restraining Haiti, during the revolution there, from threatened lawlessness against foreign residents and investors.

With Panama.—While the international relations with the Republic of Panama attracted temporary notice only through the unfounded rumors that influence was exerted upon the forthcoming election for President, a widespread discussion was carried on in both the United States and Europe concerning the right to fortify the Canal. Authorities differed as to the legality of the act, learned advocates of one side or the other offering their arguments in newspapers and serious reviews. A second side of the problem, altogether strategic, revolved around the question as to the advisability or necessity of fortifying the Canal. Here also powerful arguments were advanced *pro* and *contra*. The matter, however, was settled without much official discus-

sion, as it was evident that the Republic of Panama had yielded to the United States all authority over the Canal Zone and the waterway across it, by the appropriation by Congress (bill approved March 4, 1911) of $2,000,000 to be immediately available for the purpose of fortification, and plans to that end were accepted. It is worth noting that President Taft during his western trip asserted that the Canal could be ready for use on July 1, 1913. It was also decided that the Canal Zone was not to be opened for settlers, but reserved permanently for canal uses.

With South America.—The United States Legation at Colombia was occupied only after Nov. 12 (James T. Dubois, minister), but diplomatic relations were cordial with the other Republics. A most important decision (July 5) from the King of England, which had reference to the international relations between the United States and Chile, was the solution of the long existing Alsop case, a claim pushed by the United States and thus finally settled altogether by arbitration. The award was for the sum of 2,275,375 *bolivianos* (1 *boliviano* = $0.389 gold). Both Chile and the United States were satisfied, although the claims of neither were fully admitted.

CENTRAL AMERICA

The international relations of the Central American Republics have been, in so far as they are important, touched upon elsewhere (see VI, *Latin America*); among themselves, nevertheless, two events are significant of real progress. It is best to ignore the gossip of whatever unfriendly activities may have been exaggerated by newspaper reports of Central American outbreaks or plots between one Republic and another, for they generally amount to nothing, and as time goes by such feelings as may have existed formerly have less and less strength. The fact to-day is that serious efforts are made by the better and more patriotic minds in Central America to attain a uniform movement toward Central American progress, even if an actual centralization of a federal government must be postponed for a future day. These two events are the meeting, for the third time, of the Central American International Congress, in Guatemala, Jan. 1-20, 1911; and the organization of the Central American Press Association in Guatemala, Oct. 29-31. The Congress has already suggested action of practical value, such as the agricultural school in Salvador, the School of Mines in Honduras, and the support to the Central American Court of Justice in Costa Rica. This last was so unfortunate as to lose its new building at Cartago by the earthquake of 1910, but another has been assured through the generosity of Mr. Carnegie, to cost $100,000, this time to be erected at San Jose. The activities in 1911 were given to a discussion of a uniformity of the primary and secondary school systems of the five Republics, with plans for a parcels post and uniform consular service. The Press Association had for its direct object the procuring and distribution of news among its subscribers in the Republics, but another strong purpose is the propaganda of the idea for Central American government harmony of action and stability.

SOUTH AMERICA

Whatever international unrest showed itself in South America during 1911 was confined to the west coast, the relations of Peru with Chile, Ecuador and Colombia being at times strained. Ecuador refused to submit to The Hague its boundary dispute, and Chile was watchful over her interests in Arica province. Of far greater interest, however, were peaceful events of international movement among the Republics, all tending toward better understanding of their mutual interests and progress. During 1911 Brazil signed the twenty-ninth arbitration treaty with a foreign government, a larger number than any other nation has entered into; a quiet opinion was astir, on that account, toward seeing that the name of Rio Branco, the brilliant Brazilian Minister of Foreign Affairs,

be named as the recipient of the Nobel prize for the promotion of peace.

The South American International Postal Congress was convened in Montevideo, Jan. 8, and adjourned Feb. 2. Representatives were present from each of the ten Republics. Conventions were adopted by which the cost of postage in South America was reduced, methods of safety and speed in delivery were promoted, and a South American Postal Bureau established in Montevideo, to be put into force Jan. 1, 1912, after approval by at least six of the subscribing Republics. An important table of equivalent values of the moneys of the Republics was published. The Congress of Bolívar, formed of representatives of the five Republics—Venezuela, Colombia, Ecuador, Peru and Bolivia—whose independence Bolívar had been so instrumental in obtaining, met in Caracas, during the Venezuelan centennial celebration from June 24 to July 24. Plans were then laid for harmonious action of a practical character, like postal and tariff conventions, good roads movements and the like, between these countries. The ill-natured stories that the purpose of the Congress was to form a political union against outside interests, was quite unfounded.

EUROPE AND AFRICA

International relations east of the Atlantic developed in two ways. On one hand there was evident intention to follow the course of mutual agreement to continue a peaceful and rational attitude toward one another, but on the other a heavy disturbance of social activity, which took the form of actual war in one instance, must be chronicled.

THE ANGLO-JAPANESE TREATY

The Anglo-Japanese treaty, revised, to replace the present treaty of alliance expiring in 1915, was signed at London, July 14. The new treaty contained this article (IV): "Should either high contracting party conclude a treaty of general arbitration with a third power, it is agreed that nothing in this agreement shall entail upon such contracting party an obligation to go to war with the power with whom such treaty of arbitration is in force." This clause permits England or Japan to conclude a treaty of arbitration with any nation and thereby to free itself from obligation to uphold the cause of the other in case trouble arises between those two. If for example England has an arbitration with Russia, she is relieved from partisanship with Japan if Japan quarrels with Russia, or *vice versa*. On the other hand, it is undeniable that the new treaty adds to the stability of peace in the Far East, and it may be assumed also that it can trace its origin to the Anglo-American arbitration treaty, which is still under discussion but seems to be favored by Englishmen at home and in the dependencies.

FRANCE, GERMANY, AND MOROCCO

On July 1, 1911, German troops were landed from the gunboat *Panther* at Agadir in Morocco. This was explained as being a protective measure to ensure the safety of the German interests at that extreme southern port of the region under the rule of the sultan of Morocco. The move at once aroused the attention of the world, as it appeared to be a violation of the treaty of Algeciras in 1906, to which France, Great Britain, Spain and Russia (and to some extent the United States) were signatories. France had been for some time pushing her influence toward Fez, and she had recently sent an expedition to that city. Germany feared that Agadir might be neglected or brought into the unrest existent on that account in Morocco, and therefore claimed the right to act accordingly. Soon after, a first-class cruiser displaced the *Panther*, and a French warship also was sent to Agadir. Germany and France be-

gan then to exchange notes, or in diplomatic language to hold "conversaziones" on the matter. There can be little doubt that Germany hoped to obtain possession of Agadir, in spite of the fact that according to the Algeciras agreement Morocco was to be within French sphere of influence, and that Republic had shown great skill in developing the industrial importance of the sultanate. Agadir would be of prime value to Germany, as being a port on the African coast very favorable for South American trade, as well as useful in Far Eastern trade, and also a key to further African possessions. The international importance of the movement became striking, however, only when Great Britain, asserting that the Algeciras agreement had been violated, and contending that British interests were threatened, spoke (July 22) through the mouth of Lloyd-George, the Chancellor of the Exchequer, to the effect that "if a situation were to be forced . . . in which Britain could be treated . . . as if she were of no account in the cabinet of nations, peace would be intolerable. . . ." This quiet but none the less effective intervention of England at once caused Germany to listen with greater attention to the suggestions of an adjustment with France, although considerable anger was aroused in Germany over the English check. Premier Asquith (July 26), and the Opposition spoke to the same purpose.

The basis of an agreement over Morocco was reached by France and Germany during September. France desired complete freedom in handling Morocco, and demanded a treaty to that effect. She was willing to conciliate Germany by delivering to that Empire some portion of the Congo territory. Germany required that her interests in Morocco be guaranteed protection and that the "open door" be preserved. The whole question served to bring into prominence the intense feeling in Europe with relation to war, and to the attitude of European powers toward Africa. The working classes in both Germany and France aligned themselves against war. The people of Germany expressed strong opinions in favor of having the final agreement with France submitted to them through the Reichstag, although the constitution does not require that approval; this led to a resolution in the Reichstag demanding an extension of its rights regarding treaty making. Nov. 3 it was announced that France ceded to Germany 250,000 square kilometres in northern French Congo touching German Kameroon. The terms of the agreement (signed Nov. 4) caused such dissensions in the cabinet that resignations were made by the Councilor of the Colonial Office and by the Secretary of State for the Colonies. Some part of the German people turned their anger over the matter against England. No evil consequences resulted, however, and the affair may be considered peaceably settled, although it would seem that the offices of any arbitration tribunal had not been considered. A settlement with Spain is still under discussion. The claims of Morocco or of the Congo in the case seem to have been quite ignored.

ITALY, TURKEY, AND TRIPOLI

Another international affair involving Europe and Africa occurred during the year, the crisis being brought about by the action of Italy in her determination to obtain control of Tripoli. Sept. 27 Italy expressed to Turkey a series of grievances about conditions in Tripoli, and on the next day an Italian fleet arrived off the seaport of that name. Sept. 29 war was declared by Italy against Turkey, the reason given being that no satisfaction could be obtained from Turkey nor protection secured for Italian citizens in the African dominion of the Turkish government. Tripoli was bombarded (Oct. 3) and soon taken. Turkish vessels were destroyed in the Mediterranean, the entire coast of Tripoli blockaded, and it was evident that Italy was determined to become ruler in that part of Africa behind Tripoli, by annexation. After the first shock of surprise it was evident that the Mohammedan world was rising to oppose the Italian invasion, and the task that Italy had set herself was

plainly not an easy one. The revolution in 1908 by which Turkey attempted a constitutional government, promised to give strength to the influence of the Ottoman Empire, especially as the army had been placed on a more efficient basis, and the navy had been reorganized; certainly a spirit of patriotism was developed among the people, in addition to the fanaticism characteristic of Mohammedanism. One set of critics said that Italy was influenced by selfish interests to strike now, before this new government in Turkey became still more powerful; another set declared that Italy deserved all praise for thus acting promptly in the cause of Christian civilization, for a delay of a few years might postpone for generations the ultimate destiny of Africa to come under the influence of western Europe. Turkey lost no time in appealing to the rest of the world against the conduct of Italy. Oct. 8 a note was sent to Washington explaining Turkey's case, but only a diplomatic reply could be returned. It was claimed that international law, treaties and arbitration courts were ignored. Italy asserted that possession was the only way to preserve her rights in Africa, as well as to maintain the balance of power in the Mediterranean, which had been so nearly upset by the Franco-German dispute. Charges of barbarism were made against Italian soldiers, and counter charges against the Turkish army. Italy was said to have a mission in Africa; Turkey, on the other hand, was willing to depend upon the Arabs' fanaticism to repulse the Italians. In any event, it distressed the thinking world that both nations had not expressed a desire to appeal to arbitration before entering upon war, and that Italy had violated her own treaties, in proclaiming annexation (Nov. 5). Germany, and apparently the other powers, offered to arrange matters by negotiation, and the German Emperor authorized his ambassador at Constantinople to propose that course. It developed that secret agreements between various European powers complicated the situation. By the end of December it was apparent that all possibility of effective resistance to the Italian conquest was at an end, and the powers were bringing pressure to bear on the Porte to cede Tripoli and accept the indemnity offered by Italy. (See also VI, *Tripoli*.)

THE NEAR EAST AND THE FAR EAST

RUSSIA AND PERSIA

A Persian question, by which is meant an international disagreement between Persia and Russia, reached an acute stage in 1911, and might escape consideration were it not for the fact that an American commission of five, with W. Morgan Shuster at its head, had been invited by Persia to adjust her finances and perfect her customs system (see also VI, *Persia*). Russia had for some time planned to exercise extensive influence over Persia, agreeing with Germany that the latter should abstain from interference while encouraged to push commercial activities there. On Oct. 9 the ex-Shah's brother supported the former ruler in attempting to regain the throne. The National Council decided to confiscate his property, but it was defended by officers from the Russian consulate, and the Persian gendarmes withdrew. Persia notified the Russian Minister but received no reply. Meanwhile, the treasurer-general, Mr. Shuster, telegraphed that he would take possession of the confiscated property and in fact did so, the Russian soldiers retiring. Persia demanded an explanation from Russia, but instead of getting it the Persian Minister of Foreign Affairs received (Nov. 29) an ultimatum that an apology was imperative for the insult to the Russian consular officers, backed by the dismissal of Mr. Shuster, or Russia would occupy two Persian provinces bordering on the Caspian Sea. As this might affect injuriously certain well defined trade routes used by the British, England would feel compelled to take part in the dispute. As Germany has inter-

ests in Persia, they would need protection, and as the treasurer-general is an American acting for Persia, the United States Government was involved. The United States explained that it would require the persons of American citizens be held inviolate, even if Russia determined to coerce Persia by force. Dec. 2 Great Britain officially urged Russia to modify the ultimatum, both in the desire for peace, and for retaining American approval of that course. Persia was in a patriotic ferment. The cabinet was inclined to yield to Russia's demand for the dismissal of Mr. Shuster but was unable to prevail over the Mejliss, which supported him enthusiastically. Russian troops were concentrated at Kasbin, 96 miles from Teheran, and on Dec. 21, an immediate advance on the capital was threatened unless the terms of the ultimatum were complied with. Further resistance was useless, and the Mejliss accepted the proposal of the cabinet to appoint a commission of five with plenary powers to deal with the Russian ultimatum. A reply conceding all demands was transmitted to Russia on the 22nd. The formal dismissal of Mr. Shuster took place Dec. 25.

THE REVOLT IN CHINA

The unrest in China has been growing for more than a year past, and to the western world its significance has not been very plain nor has the desire of the people of China been understood. Discontent has been manifested for quite the opposite reasons from those that actuate the people in Europe and America. In China resentment is felt against the spirit of modern progress rather than inclination in its favor; while it is accepted as inevitable, opposition is based upon the inequal distribution of its advantages. (See also VI, *China.*) April 27-May 1 a revolutionary outbreak occurred in Canton against the throne, which, as Manchu, was hated in that southern metropolis. The rebels took cities and destroyed property, and in so doing introduced the international problem that may lead to serious consequences to the world, because many foreign missionary stations are maintained throughout the empire, and the concessions for railway and other developments may be endangered. May 8 a responsible cabinet was announced, but in August a revolt of equal gravity broke out in the Province of Sze-Chuen, and the government at Peking began to regard it as threatening. The Manchus felt that the Celestial throne was threatened. Sept. 24 Chinese government and rebel troops clashed, with slight advantage to the former; Oct. 14 the commander of the revolutionary forces at Hankow told the foreigners that they would be safe if they remained neutral; Oct. 16 a loan asked by the Government was refused by foreign bankers; Oct. 17 German sailors were landed at Hankow and attacked by a mob, and thus to the end of the month the fury of the revolt increased. The generalissimo of the rebels had demanded that the foreign consuls stationed at Hankow recognize his authority in that vicinity, so in this way also the international aspect was intensified. American marines at Manila were ordered (Oct. 16) to Peking, and by Oct. 26 more cities were in the hands of the rebels. The Manchu rulers, against whom much of the rebellion was directed, seemed ready to flee to Shanghai, and the mass of the people were willing to see the overthrow of the dynasty. Concessions were offered by the throne, and peace negotiations between the imperialists and the revolutionists were set on foot. Oct 30 the demands of the National Assembly for a constitutional government were seemingly granted, and a cabinet without nobles was promised, while one edict was issued that Chinese and Manchus were to be considered equal. By Nov. 3 the city of Shanghai (except for the foreign concessions) was in the hands of the revolutionists with practically no resistance, the Chinese soldiers, the police and the firemen apparently sympathizing with them. The British held the railway by the British volunteers of the city, but conditions were unsafe for all foreigners and foreign investments, so that the British admiral telegraphed his government that more troops were needed in

the Hankow district. By Nov. 7 unconfirmed rumors of the fall of Peking were spread, followed by others that the royal family had surrendered or were fleeing in despair; Canton and Foochow fell (Nov. 9) while at the same time the provinces north of the Yang Tse River were declaring for the revolution. A surprise to all foreigners was the appointment of Dr. Wu Ting Fang, formerly Chinese minister at Washington, to the post of Director of Foreign Affairs in the reform government in the province of Kiang-su. He announced that he had joined the movement and would help to establish a republican form of government in China. He claimed that 99 per cent. of the population of China were supporting the revolution, and he wished to secure peace for the country, if possible, sending a stirring appeal to the American people to support the republican movement. Nov. 8 it was reported that Hankow was destroyed, the loss being $50,000,000 and 400,000 people destitute. Foreign residents were spared. In Nanking imperialist troops killed Chinese. Peking did not fall, as Yuan Shih-kai, the "strong man" of China, took command there. The foreign powers also asserted the right to protect their interests. It was not until late in December, however, that signs of foreign intervention began to appear. On Dec. 18, Wu Ting Fang, representing the revolutionists, and Tang Shao-Yi met at Shanghai to discuss terms of peace. Dec. 20 the representatives of Great Britain, Japan, France, Germany, Russia, and the United States formally expressed to the conferees the hope that the negotiations might lead to the establishment of peace. The demand of Wu Ting Fang for the granting of a republic, with which Tang Shao-Yi expressed his sympathy, was repudiated by Yuan Shi-kai, who announced his intention to save the dynasty at all costs. On Dec. 21, it was rumored that the monarchy would be saved by foreign intervention, but no move had been made up to the end of the year to justify the report. On the contrary, Yuan Shih-kai had been obliged to consent to refer the decision as to the future form of government to a national convention, and the abdication of the Empress Dowager and the Emperor was expected to be only a question of days.

INTERNATIONAL NOTES

Carnegie Peace Medal.—On May 25, 1911, the Governing Board of the Pan-American Union presented to Andrew Carnegie the gold medal voted him at the Fourth International Conference of American States.

The Nobel Prizes.—Toward the end of the year it was announced that the Nobel prizes for 1911 had been awarded to Mme. Curie, of France (Chemistry); M. Maeterlinck, of Belgium (Literature); Wilhelm Wien, of Wuerzburg, Germany (Physics); Prof. Allvar Gullstrand, of Upsala, Sweden (Medicine); Prof. T. M. C. Asser, of The Netherlands, and Alfred Fried, of Vienna, Austria, jointly (Peace).

Distinguished Visitors to the United States.—Coming on official visits to the United States during the year, were Count Apponyi of Hungary (Feb. 9) to address the public on the logic of peace; Baron d'Estournelles de Constant of France (March 10), who made an extensive tour of the country on the same mission; Admiral Togo of Japan, (Aug. 4) who crossed the continent as a guest of the nation and who in a quite informal discussion with President Taft expressed the hope that an arbitration treaty between the United States and Japan, similar to that pending between the United States and Great Britain, might be negotiated; Admiral Goni of Chile, (Sept. 30) who was present at the launching of the Chilean battleships in United States construction yards. A Chinese war-ship, the first ever to be seen in American waters, anchored in New York harbor Aug. 26.

Bibliography.—Particular thanks are due to the American Monthly *Review of Reviews* for permission to use its columns and its tables, on all matters relating to international relations. It is impossible for the student of contemporary affairs to do without them.

VI. FOREIGN HISTORY

LATIN AMERICA

ALBERT HALE

ARGENTINA

Centennial Exhibition.—With the end of the year 1910 the celebrations connected with the one-hundredth anniversary of the Republic's independence were concluded. The Railways and Land Transports Exhibition lasted into 1911, and the results from it were far-reaching. Great impetus was given railway building in South America by what was on view there, and foreign exhibitors gained materially by their increased knowledge of construction possibilities, as well as by actual orders for new equipment. British manufacturers, it is reported, received orders for $10,000,000 of supplies. Considerable attention was attracted to the exhibits from the United States, and a greater intimacy in regard to the remarkable field for railway activity in that part of the world should result to the advantage of manufacturers here. As the railways in operation at the beginning of 1911 had 18,166 miles (28,636 kilometres of track), 2,140 miles (3,445 kilometres) of which were added in 1910, and as about the same amount of extension has been opened for service in 1911, the great advances the country is making are evident.

Public Works.—In other ways Argentina benefited from the centennial exhibition. The city of Buenos Aires was enriched by many parks, monuments and public buildings, and throughout the country similar additions were of a substantial character. Among the improvements of 1911 were an electric railway between the capital and the city of La Plata; the agreement for the construction of dry docks to accommodate the largest Dreadnoughts, in the port of Bahia Blanca; the enlargement of the harbor in Buenos Aires and several other ports; the commencement of the underground railway in the same city (Sept. 14); and the completion of the new Capitol.

Commerce and Industries.—Commercially the Republic's business increased even over that of 1910, which was one of the largest in its history, the foreign trade reaching a total of $702,664,810 (gold) in that year. Adverse weather conditions had lowered the totals of the agricultural products of Argentina for 1910, but in 1911 the crops were much larger, and the expansion in amount of acreage cultivated was noticeable. Argentina in 1911 sent more meat to England than did the United States, and its proportion of exports of food stuffs will increase from now on. North American interests acquired control of the meat-products industry in the Republic during the year, and an international combination was organized to handle the tobacco business. Industrially, there were reported in 1911 practically 32,000 establishments, in which about 330,000 persons are employed and 230,000 h. p. used, of which 10,000 was hydraulic power, 950 animal, 3,850 naphtha, 4,400 gas, 189,000 steam, and 21,800 electric. Of the employees, 203,000 worked in factories, 127,000 at home. Petroleum fields were further developed during the year, and the oil supplied from the fields of Comodoro Rivadavia was utilized in locomotives.

Immigration. — Immigration into Argentina averages annually close to 200,000 individuals (about 40 per cent. returning), mostly from Europe, Italy furnishing a large proportion; to accommodate them, a magnificent new immigrants' hotel was inaugurated in 1911 by the President of the Republic in Buenos Aires, with all arrangements as sanitary as science could make them; another in Bahia Blanca was also opened, as the government endeavors to divert the tide of immigration toward the southern regions through this port. In order to regulate the health of these newcomers, the government instituted certain reforms in examination for 1911; these consisted in physical and other examinations to prevent the introduction of disease, and seemed to bear with particular hardship against the Italians. In July the Italian government, as retaliation, established rules restricting emigration from home ports, which noticeably reduced the number of Italians coming to Argentina to work during harvest times; the two governments were on that account in disagreement, and international friction resulted. As a consequence, efforts were made to induce farm laborers to go out from England during harvest time, the railways acting in coöperation. This proposed source of supply of laborers may have a decided influence in changing the character of Argentina's rural population. The immigrant law in 1911 demands that only able-bodied individuals may enter the country, and that some one must be responsible for them; the burden of responsibility for transportation violating this law is, as in the United States, thrown upon the steamship companies.

The Budget.—The budget for 1911 has been accepted for expenses at 27,490,965 *pesos* (gold = $0.965) and about 193,000,000 *pesos* (paper = 0.44 of a gold *peso*), and as there was a deficit in 1910, the revenue not being sufficient to meet the extraordinary expenditures of the centennial year, every effort was made to carry out a rigid economy in the cost of government. The income is estimated at 87,066,681 *pesos* (gold) and 124,459,318 *pesos* (paper), which should more than balance the outgo. This economy is the more urgent, because of scandals about mismanagement of funds in the Department of Agriculture, and of frauds in the custom house, which were corrected, but cost the government considerable money.

Scientific Missions.—Scientific work in many Departments (Provinces) was carried on during 1911. A commission from Amherst College (U. S.) was sent to Patagonia to make a biological survey; another commission from Germany explored the Argentinian Andes for geologic data, noting also the possibilities of commercially exploiting the region visited. Careful plans were made for irrigation in many of the arid places of the Republic. At the Turin Exposition (Italy), the government had a fine pavilion of the natural and industrial products of the country. In order to carry on an active propaganda concerning Argentina and its attraction for settlers and investors, the government (Department of Agriculture) sent to commercial bodies and museums abroad exhibits of resources, with abundant literature on opportunities, and proposes in this way to attract general attention.

Minor Events.—The year at home passed with only slight disasters or disturbances. In Buenos Aires a severe fire destroyed a portion of the customs warehouses and caused damage to the extent of millions of dollars. Minor strikes occurred in the large cities, but these labor difficulties were soon settled. In foreign affairs the nation remained at peace with the world. One of the great events of 1911 was the launching of the two dreadnoughts, *Rivadavia* (Aug. 26) and *Moreno* (Sept. 23) 27,000 tons each, which the government had ordered constructed in United States yards.

Administration.—No change in the administration of the Republic occurred. President Roque Saenz Peña (inaugurated October 12, 1910) remained in office and carried out the principles of progressive administration with which he had begun his term.

BOLIVIA

No change of administration took place in the Republic during 1911, but the cabinet was reorganized. The government gave continued attention to developing the material resources of the country, and the financial situation was very favorable. The government decided to create a new Department on the Upper Paraguay River, to be known as the "Departamento de los Chiquites," its capital being Puerto Suarez, a prosperous city on that river. An extra session of congress was held early in January to discuss a treaty of commerce and navigation with Brazil, increase of bank facilities, and national finances. The Bank of the Bolivian Nation was authorized with a capital of 25,000,000 *bolivianos* (£2,000,000 gold), one-half taken by the government. Good crops in agricultural products were reported at the end of the year, and Bolivia's chief source of mineral wealth, tin, commanded high prices. The government arranged for the employment of five officers and 13 subordinates from the German army to give instruction for three years to the Bolivian army. Diplomatic relations with Argentina were resumed early in the year.

Railways.—The most noticeable feature of the year was the development of the railway system of the country. The Arica-La Paz line made such progress that it was expected to be opened by the end of 1911. The line to Potosi from the station at Rio Mulato, 170 kilometres (106 miles) was provisionally opened to passenger traffic. Steady work was done on the Oruro-Cochabamba line, 200 kilometres (125 miles). A separate entrance to La Paz for the Antofagasta and Bolivia Railway was granted by the National Congress, so that the distance from the coast, coming from the south, will be shortened.

BRAZIL

Naval Revolt.—Marshal Hermes da Fonseca was inaugurated as President of the United States of Brazil on Nov. 15, 1910. The first of his four years of administration covers therefore 1911. At the very beginning of his term a revolt (the second, the first occurring in Nov., 1910) broke out in the navy (Dec. 9-10) in the harbor of Rio de Janeiro; it was suppressed with vigor after some loss of life, but martial law for Rio, and the unusual measure, for Brazil, of press censorship, were adopted.

Public Works, Communication, and Transportation.—Among the improvements for the year were the completion of the (German) transatlantic cable, from Monrovia to Pernambuco, opened to use April 1; the preparation for establishing in addition to the already extensive system, 15 new wireless telegraph stations in the Republic, especially in the Amazon and Parana basins, where ordinary communication is extremely difficult; the modernization of the harbor at Pernambuco (Recife), continuation of the plans for the harbor at Rio de Janeiro, where work is still progressing, and the approval of similar plans for other harbors along the coast; the opening for traffic of further lines on the Madeira and Mamore Railway, so that about 300 kilometres (about 185 miles) out of a total of 346 kilometres (214 miles) is commercially available; the completion of arrangements with the Mississippi Valley and South American Steamship Company to run regular steamers between New Orleans and Rio de Janeiro; new steamship lines also between Brazil and Antwerp and Brazil and Stockholm; and the completion of a railway connection which now permits of through travel overland between Rio de Janeiro and Montevideo (Uruguay), which can now be extended toward the north as far as Victoria. A misfortune was the loss by fire (Sept. 15) of the National Printing Office in Rio, with great destruction of official documents.

Scientific Missions, Education, and International Relations.—May 3 the Leland Stanford Expedition to Brazil, for the purpose of studying the geology and natural history of the northern states, arrived at Para. The Brazilian Department of Agriculture sent to the United States two special commissioners to study conditions in North America, with a

view to enlarging their country's agricultural output and the markets therefor. During the year the public school system of the Republic was so reformed that both secondary and higher education are under the control of a national board of education. A delegate from Brazil was sent by the government to the Congress of Races in London (July). In 1911 Brazil signed its twenty-ninth arbitration treaty, the largest number of such international agreements as yet accepted by any one nation; the people are hoping therefore that the name of Barão Rio Branco, Minister of Foreign Affairs, will be proposed for the Nobel peace prize. An interesting feature having international significance was the celebration of the fiftieth anniversary of the foundation of the *Deutsche Zeitung* (Porto Alegre), the oldest German newspaper in South America.

Agriculture. — Agriculturally the country prospered. The coffee crop, which begins to be harvested in September and upon which much of the commercial success of the year depends, was up to expectations, but the valorization plan, which has so far been effective in limiting output and maintaining prices, kept the amount of coffee exported within the estimated limit of 10,000,000 sacks. The rice crop, which within recent years has increased in amount, was very satisfactory, and the State of São Paulo has begun to export this grain. Wheat, which is now grown in the State of Rio Grande do Sul, gave double the crop of the preceding year. So encouraging is this result, that there has been offered a premium for growing an improved quality of wheat and an increased quantity. The national government has continued its preferential tariff on some imports from the United States, and on wheat flour has placed this reduced tariff at 30 per cent. instead of the hitherto established 20 per cent. reduction.

Finance.—In financial matters Brazil has taken steps to overcome the deficit recorded at the end of 1910. Although there is probability of a deficit at the end of 1911, yet earnest measures of economy in expenditure, with careful regard for conservation of the increasing income, will, to some extent, neutralize this. What money was borrowed from abroad was used for permanent improvements that will ultimately be for the country's benefit. Exchange continued, with but slight variations, at the established rate of 16d. ($0.32 gold) for the paper *milreis*.

CHILE

Administration and Budget.—The new President of the Republic, elected to fill the unexpired term of his predecessor, who died in Aug. (1910) in Germany, is Dr. Ramon Barros Luco, inaugurated Dec. 23, 1910. In his message to the Congress, June 1, 1911, he called attention to a deficit in the finances of the country; the government then took practical steps to make the income and outgo for the year 1911 balance, and the budget was therefore fixed at 241,744,000 *pesos* paper, with 63,124,000 *pesos* gold (the paper *peso* is valued at $0.21, the gold *peso* at $0.365 gold), leaving a surplus of about 1,000,000 *pesos* paper. Much of the money expended from the public funds is applied to material and permanent improvements, such as the longitudinal railway and the harbor works, on which upward of $4,000,000 gold was expended in 1911.

Public Works.—During the year, specifications for the improvements to the ports of Valparaiso and San Antonio were offered by the government for international competition, the allowance for these works being something over £3,000,000; they were opened in Santiago in July, and resulted in favor of the firm of Galtier for San Antonio only, no bids being received for Valparaiso. Funds for this purpose are supplied by a loan issued in Jan., 1911, in London, to the amount of £4,905,000. In April, contracts were let to English firms for two battleships of 26,000 tons, by which the Chilean navy will be strengthened.

Commerce and Industry.—Commerce was satisfactory during the year. While the foreign trade for 1910 was the largest in the history of the country, that for 1911 equalled

it, and the nitrate interests were satisfactorily regulated. The coal-mining industry was advanced, and Chile, being the only country in South America to mine coal on a regular commercial basis, is trying to encourage its production.

Railways.—In regard to railways, much activity was manifested, for the extension of the longitudinal system southward to Puerto Montt was accomplished at the end of the year, the new approach to Bolivia through Arica was opened, and a concession for another trans-Andean line was granted. An instance of the progress made by the State railways was the order (Sept.) from United States mills of 10,000 tons of rails.

Minor Events.—In Sept. Admiral Coni, president of the Chilean Naval Commission, was sent to the United States to inspect the navy and to study methods of target practice. On July 10, King George (of England) decided the famous Alsop case, long under negotiation between Chile and the United States, the payment to the claimant being set at £187,000, and Nov. 13 Chile paid through the U. S. Dept. of State $966,600 gold.

In Dec., 1910, the Chilean Minister to the United States died very suddenly in Washington, and by courtesy of that government his body was carried officially to his native land in the U. S. S. *Delaware*. This friendly act was cordially recognized in Chile as a token of sincere regard from the northern republic. A new Minister was subsequently appointed and received in Washington, June 27. A severe earthquake was felt (September) in the northern provinces of the country, resulting in considerable damage and many deaths. A local outbreak of the Peru-Chile difficulty took place during June. It related to the authority to hold mass in the churches of the territory in dispute between the two countries, but no serious consequences resulted, although the people showed intense excitement.

COLOMBIA

Administration.—The present President of the Republic, Carlos E. Restrepo, was inaugurated Aug. 7, 1910, as constitutional executive for a term of four years. He was the candidate of the liberal party and was elected from Antioquia, the capital of which is Medellin, this being the first time that that part of the Republic has been in power. Modern, in distinction to conservative, methods of conducting the government have characterized the progress of the country during the year, on that account. In Feb. a general election was held for local (provincial) legislatures, and later for the national congress. The result demonstrated the people's confidence of the administration and the support of the authorities. One fact was made clear, that the outlying Departments (States) desire a more independent relationship to the central government than has hitherto existed.

In the closing months of 1910 a special representative from Panama visited Bogota in the hope of receiving recognition for the new Republic, but the mission was fruitless.

Budget.—The budget for 1911 was passed by the national assembly, expenses being figured at $8,937,688 gold, and revenue estimated at $9,779,500 gold. This is in line with the expressed economic policy of the administration, which is making persistent effort to adjust the finances of the country so as to obtain the confidence of foreign investors. A loan of £300,000, guaranteed by custom-house funds, was negotiated in Paris.

Industries.—On April 16, under President Restrepo, the first Agricultural Congress of Colombia was opened. Delegates from all sections of the country were in attendance, and there was indication that progressive ideas in this branch of industry were gaining ground. A real industrial revival is reported, and exports of coffee, hides, rubber, gold and silver with other metals, are increasing. Success has followed the investigation of the oil fields of the Tubara district in the Province of Baranquilla, on the north coast. The quality of the oil is excellent and it is commercially available.

A territorial change was effected in Colombia by an executive decree; the Province of Arauca was separated

from the jurisdiction of the Department of Boyaca, and will be governed by a special commission. A National School of Mines was organized, to be located in Bogotá. The diplomatic and consular representation was reconstructed on civil service lines.

COSTA RICA

Debt.—No change in the government is to be noted in 1911. On a contract made Dec. 7, 1910, called the Fernandez-Keith agreement, approved Jan. 11 by the bondholders, and by the National Congress of Costa Rica, Feb. 23, signed by the President, Ricardo Jimenez, March 1, the foreign debt was refunded into bonds amounting to £1,617,200 (16,899,740 *colones*, one *colon* equalling $0.465 U. S. gold). The amount of refunding bonds actually issued was £1,621,600 ($7,880,976 U. S. gold) in exchange for foreign obligations. These are to be known as the Consolidated Gold Bonds of 1911, and are payable on or before Jan. 1, 1958.

Central American Court of Justice.—The new seat of the Central American Court of Justice, for which Mr. Carnegie again contributed a fund of $100,000, after the destruction of the original building at Cartago, has been officially removed to the capital, San Jose.

Railways.—The railway between San Jose and Puntarenas on the Pacific coast was formally opened to traffic on Jan. 14. This line (67 miles) was built and is to be operated by the government, independently of other railways in the Republic, but it forms the western portion of a transcontinental system, in connection with privately owned railways, over which freight and passengers can be carried from one ocean to the other in less than 24 hours.

CUBA

Politics.—As President Gomez stated in his message early in the year, "the problems of the Republic have become economic rather than political." Whatever local disturbances may have occurred during 1911 have no real significance, looked upon in that unprejudiced light, and are therefore omitted from this résumé.

Finance.—Of financial progress much demands notice; the so-called Revolution 6 per cent. bonds amounted originally to $2,196,585, of which sum $1,464,585 has been paid during the past two years; the balance, $732,000, falling due Oct. 1, 1911, was ordered cancelled on that date through the New York bank of Speyer & Co. In other ways the national debt was reduced by $3,465,085, leaving the total less than it was as reported April 3, $62,083,100. In Havana itself, the municipal budget as approved amounted to $3,936,566, all of which was applied to the capital of the Republic, but as this is less than the revenue of the previous year, there is no doubt of a surplus.

Public Works and Education.—The census figures show 2,161,622 inhabitants at the beginning of the year. Public works were continued in all branches of the government, one of the most important being the quarantine station (Cayo Duan) at Santiago, which is thus preparing itself for the increased traffic sure to come on the opening of the Panama Canal. In the post-office (514 stations in 1911) advantageous progress was made; the schools had an attendance of over 175,000 pupils, and new buildings were erected to accommodate them; school savings banks were created with satisfactory results, and long-distance telephone connection was established between Havana and many parts of the island. Plans for a zoölogical park in Havana, patterned after that in New York City, were perfected, and a new Cuban White House was authorized, for which plans were accepted, and $985,000 toward its construction appropriated in 1911. Oct. 10, two naval vessels, the *Patria*, a schoolship, and the *Cuba*, a cruiser, were launched in U. S. yards.

Agriculture and Fisheries.—Agriculture, the mainstay of the country's prosperity, was much advanced during the year. A commissioner was sent to the United States to purchase thoroughbred stock for breeding purposes in the six government experiment stations, and diversified farming was given particular encourage-

ment, while expert study was applied to the great crop interests. A national board of fisheries was created, to have charge of all matters relating to the waters of Cuba. The sugar crop for the crop year ending in Sept., 1911, approximated 1,500,000 lb., and that for 1912, now planted, should reach 1,900,000 lb., if the outlook holds. Tobacco reports estimated the year's crop at not far short of 200,000 bales, with a range of higher prices.

Raising the "Maine."—The United States Congress had appropriated in 1910 and 1911 $650,000 for the removal of the battleship *Maine* from Havana harbor, and late in 1910 work was begun; cofferdams were erected around the wreck during the summer, and the hull was thus exposed. Many bodies of those killed at the time of the explosion were recovered, and the internal condition of the vessel was examined. Late in November it was decided that an external explosion had caused the disaster. (See also XXXII, *Civil Engineering.*)

DOMINICAN REPUBLIC

Official Name.—The official name of the nation is the Dominican Republic—República Dominicana—and not Santo Domingo, which is the name of the capital city only. Confusion must be avoided also between this independent government and the little West Indian island called Dominica, a territorial possession of Great Britain.

Assassination of President.—Ramon Cáceres, the President, was shot (Nov. 20) and died in the American Legation. No great political disturbance resulted immediately, but U. S. Minister Russell was hurried to Santo Domingo from Washington. Señor Victoria was chosen (Dec. 2) provisional President.

Boundaries.—A boundary dispute with the Republic of Haiti (on the same island) threatened, late in 1910, to lead to trouble, but peaceful arbitration of it was brought about by offers from the United States (May 3), and the decision will be left to the Hague.

Industries and Finance.—The year 1910 was the most prosperous one in the history of the country, and 1911 promised to duplicate it. Commercially there was no set back, and agriculture—sugar and cacao—the staples of national industry, returned good crops. The budget for the fiscal year 1911-12 estimated the revenue at $4,257,000 and the expenditures at $4,256,804. Payment on the foreign debt was punctually made. A national bank in Santo Domingo was organized by United States capital; a School of Agriculture was opened; a national medical congress held; new railway lines were opened and surveys for others made; steamship communication was increased; considerable street paving and similar municipal improvements begun, and other substantial progress made. Bananas are becoming important in exports.

ECUADOR

Administration.—On July 13, 1911, the President, Eloy Alfaro, felt obligated to resign for the few remaining weeks of his term, his successor, Emilio Estrada, was constitutionally inaugurated Aug. 31, his election having been effected earlier in the year. Estrada died suddenly Dec. 22. Until Sept., 1912, when Congress meets, the office will be provisionally held by Carlos Freile, President of the Senate, although elections are to be held immediately. The proposed lease of the Galápagos Islands to the United States was refused by the government. Sr. Abelardo Moncayo was appointed in Aug. as Minister from Ecuador to the United States. A National Naval School was established in Quito.

Industries and Finance.—In commercial and agricultural matters the country enjoyed continued prosperity. Cacao shipments were satisfactory, general crops yielded well, and coal, which may prove available, was discovered. The service of the railway between Guayaquil and Quito (297 miles) was improved, while advance was made on the new line under construction by a French company, from Bahia de Caraquez to Quito (186 miles). Financially the Republic felt

somewhat embarrassed, for a deficit from 1910 had to be assumed, but severe methods of economy were put into practice by the Government, and it was hoped that by the end of the year the difficulty would be overcome. On Sept. 24 a heavy earthquake did serious damage in the city of Riobamba, at an elevation of about 9,000 feet, about 85 miles from Guayaquil. The ancient town was destroyed in 1797. Oct. 22 sanction was given for a contract of $9,000,000 to clean the port of Guayaquil.

GUATEMALA

Administration.—Manuel Estrada Cabrera, who had in 1910 been re-elected for another term, resumed the Presidency of the Republic on March 15, 1911. In a message (March 1) he announced that negotiations were on foot for refunding the national debt.

Railways.—Jan. 1, there convened in Guatemala City the third Central American Conference. (See V, *International Relations.*) The Guatemalan section of the Pan-American Railroad was begun late in 1910 and work progressed during the year. When this is finished, and the government is eager to assist this industrial enterprise, an uninterrupted connection will be established between the city of Washington and that of Guatemala. A Central American Press Association was formed in the capital in 1911, its object being to modernize newspaper conditions in Central America on an economical basis.

Budget.—The budget for the fiscal year ending June 30, 1912, fixes the expenditures of the nation at 37,417,217.12 *pesos* (a *peso* fluctuates considerably, and varies from $0.10 to $0.07, gold); an endeavor will be made to meet this by the normal income of the government.

HAITI

Politics.—A political disturbance in the first half of the year led to the departure from the country of General Simon (Aug. 4), and the elevation to the Presidency of Cincinnatus Leconte, Aug. 16, 1911. The boundary dispute with the Dominican Republic at the end of 1910 was referred to the Hague. (See *supra, Dominican Republic.*)

Industries and Finance.—The budget for the fiscal year 1911 was approved at $3,279,858 (gold) of expenditures, the income being supposed to balance that amount. A temporary loan of $600,000 from New York bankers was negotiated. A National Bank at Port-au-Prince was inaugurated March 8. American concessionaires intending to build a railway across the country and to begin other industrial matters were active in making preliminary surveys from April 18 on. In Port-au-Prince and Cape Haitien electric light and power were supplied by modern plants under concessions held by United States companies. The government contracted for a national theater in Port-au-Prince. October 6 a severe earthquake shook Port-au-Prince early in the morning, creating a panic, but causing no particular damage.

HONDURAS

Political Changes.—The Provisional President of the Republic, Francisco Bertrand, was inaugurated March 28, 1911. This was the result of a revolution earlier in the year directed against the administration of former President Dávila. Puerto Cortez was captured, the interior was found to be weak, and on March 19 a conflict took place in which government troops were beaten; the change was effected immediately thereafter, but was accomplished by arbitration between the opposing parties, without bloodshed. Retiring President Dávila, who delivered an address of greeting to President Bertrand, emphasized this point as a certain step in advance over previous Latin-American political revolutions. Manuel Bonilla was elected President Oct. 29.

Finance.—Jan. 10 a convention was signed with the United States (not yet ratified, see V, *International Relations*) by which the foreign debt of the Republic is to be financed, at a value of $10,000,000, in the United States. A census was taken December

18, 1910, the population being 553,446.

Commerce.—Commercial conditions, which are altogether agricultural and mining, made no real progress during the year. Better steamship connection was made with the east coast, and the banana industry remained normal.

MEXICO

The Revolution.—General Porfirio Diaz, on Sept. 16, 1910, opened Congress with words of congratulation on the accomplishments of the century passed since the declaration of independence, and prophesied equal achievement for the beginning century. On Dec. 1, 1910, when Diaz took the oath of office for the eighth time as President of the Republic, his outlook on the future was apparently quite as hopeful, but a note of uncertainty was detected, which, however, gave but a faint sense of the events actually taking place in the country. His assurance of a steadily maintained prosperity was nevertheless as strong as ever.

But during 1911 the entire organization of the Mexican government was changed. In order to understand what took place, it is necessary to examine the causes which led to the revolution, for it should be called such, although in most respects it differed from any other revolution that had ever before upset the routine of a Latin-American country. During the Diaz régime, which began with his first term in 1876, the nation had been conducted on a seemingly constitution-respecting system, but many features of the written constitution were in so far as was possible ignored. The governors of the states and other local as well as federal authorities obtained office by recorded votes, but unquestionably their power, delegated them from below, was actually derived from official influence above. In this way there grew up a party politically known as adherents of President Diaz, but called also *científicos*, members of which controlled the material conditions of the country. At the time of the last election, disturbances had arisen by the suppression of the candidacy of Francisco Madero, and the actual expatriation (under another phrase) of General Bernardo Reyes, who had likewise expressed a desire to become a candidate for the Presidency. Although the country had undoubtedly reached a stage of material and educational advance far beyond that of the preceding generation, abuses in government and favoritism in office had worked great hardship to the masses of the people, and taxes bore progressively harder upon those who could least afford them. As soon, therefore, as the excitement of the centennial celebrations had subsided, the feeling of discontent against the existing order declared itself in a revolution, led by Francisco Madero, in the northern states of the Republic.

The Maderistas, toward the end of Nov. (1910) stirred uprisings in Durango and Chihuahua. Accidentally the party was aided by an anti-American sentiment in the country, which had been fostered by the growing strength of United States investments in Mexico; the cause of the immediate excitement was the lynching (Nov. 3, 1910) in Texas of a man named Rodriguez who, it was claimed, was a Mexican citizen and whose guilt had not been proven. The common people, mistakenly assuming that Madero's move, as it occurred near the border, was to some extent a protest against the government's lack of energy in this case, joined him in numbers. It was soon seen, however, that redress of such a grievance was unthought of, but by that time the weakness of the Mexican government was disclosed, and the revolutionists took courage and made headway. By Feb. (1911) their army had established foci in Chihuahua and Coahuila. Meanwhile they had held possession of several northern railway lines, and thereby cut off the communication of the regular army with the northern bases.

Smaller outbreaks now showed themselves in various parts of the country, and the Government attempted to crush them, giving as an excuse for the evident slowness of movement against the center of the revolution that the entire Republic

must be at the same time safeguarded. As the year advanced, however, it became more and more evident that the Government was unable to cope with the rising revolutionary forces, that it had no hold on the patriotism of the people, and that the army itself was suspiciously weak in loyalty to federal authority. Neither public opinion both within and without Mexico, nor those who studied conditions at first hand, credited the possibility, even to the end of Feb., that the final outcome could be anything but the defeat of Madero.

By March, uprisings were reported in Veracruz and Oaxaca, in the south. In the north, the revolutionists were seriously threatening the city of Chihuahua and the chief frontier customs port, Ciudad Juarez. Feb. 9 government troops had been able to enter Juarez, and Feb. 14 relief with 1,000 men held the city. But they were unable to repress the attacks upon many towns from Torreon north, and were really under siege themselves. Then, suddenly, toward the end of Feb., the United States ordered 20,000 troops to mobilize on the Mexican frontier. (See V, *International Relations;* and XXI, *The Army.*) Rumors told of interference, of protests from the Mexican government (which had the effect of retiring from the Mexican coast United States war vessels ordered thither at the same time), and of offers of compromise between the federal authorities and the revolutionists. Opinion throughout the world now acknowledged that Madero's party had become so strengthened that success was not improbable, and vague but well defined stories were current that at least Diaz would compromise with Madero, or even yield to pressure and resign the presidency.

At the end of March, several of the southern states were in open rebellion. Campeche, Yucatan, and Guerrero were harried by lawless bands. No place was any longer secure. Secretary of the Treasury Limantour came hastily back from Europe to act as peacemaker, and promises of drastic reforms, especially in matters of land tenure and state administration, were freely made. The revolutionists gained courage and support even if they seemed not to make headway otherwise, but their chief aim, the capture of Ciudad Juarez, was drawing to a realization. The Maderistas had declared Francisco Madero Provisional President, a nucleus of a government was organized, and their recognition of the gravity of the situation was clearly evident.

On April 1, 1911, Congress was opened with a speech from President Diaz. He stated at once that the Government had agreed to forbid a president to succeed himself, was prepared to reform the election laws, and to initiate measures to satisfy the popular demands. The Cabinet was changed thereupon, new blood displacing the *científicos;* law courts and judges were to be made more independent of the central government, and the immense land properties were to be gradually subdivided. These promises came too late. The people sought Diaz's retirement, not later, after the war should be over, but at once to end the régime of the *científicos.* Open negotiation was commenced with Madero; Francisco L. de la Barra, at the time Mexican Ambassador to the United States, was recalled and made Secretary for Foreign Affairs in the Cabinet, the date of the appointment being officially given as March 27. General Reyes was requested to return to his native country, and other changes were attempted. Toward the middle of April the battle of Agua Prieta was fought, in which United States citizens in Douglas, across the border, were killed, and great fear was expressed that the United States would interfere. Commendable restraint, however, was exercised by President Taft. On April 23 a truce of five days was signed, during which negotiations were attempted with Madero, the basis being an agreement to recognize the revolutionary party, to replace governors (in the north, at least) by Madero men, and to reform the land laws. Meanwhile, the southern revolutionists continued their activity, seemingly independent of Madero. Anarchy was beginning to spread throughout the country. Madero's party was by this time un-

willing to accept the concessions for which they had at first contended. They demanded the resignation of President Diaz, of Vice-President Corral and the Cabinet. Fiercer attacks were made upon Ciudad Juarez, the vital point of the revolution, and at last, after the most serious battle of the entire campaign, that city—the very important northern frontier custom house—capitulated to Madero on May 9. On May 21 peace was signed.

May 25, General Porfirio Diaz resigned his office as President of the United Mexican States in these words:

> The Mexican people, who generously covered me with honors, who proclaimed me their leader during the international war, who patriotically assisted me in the development of the country's industry and commerce, in the establishment of its credit, in surrounding the Republic with international respect, and obtaining for it an honorable place among nations; this people has risen in rebellion, asserting that my presence as Chief Executive is the cause of the insurrection.
>
> I recognize no fact imputable to me which could have caused this social phenomenon; but assuming without admitting that I have been unconscientiously guilty, this possibility makes of me the person least able to reason out the guilt.
>
> Therefore, respecting as I have always respected the will of the people, and in conformity with Article 82 of the Federal Constitution, I come before the National Congress to relinquish unreservedly the Presidency of the Nation; and I do this with the more reason, because, to retain the position, it would be necessary to continue to shed Mexican blood, to endanger the nation's credit, to scatter its wealth, and to expose it to international conflicts.
>
> I hope, gentlemen, that when the passions accompanying every revolution are calmed, an impartial and approved study will bring out, in the national mind, such a judgment that will let me die with the conviction in my soul that my life, which I have consecrated and will continue to consecrate to my countrymen, has been justly estimated.

General Diaz withdrew with Vice-President Corral and the Cabinet, and he soon after left Mexico with his family to live in Spain.

The Elections.—Francisco de la Barra was immediately appointed provisional President, in accordance with the constitution, as he had been Secretary of Foreign Affairs, and a new Cabinet was announced, in which Madero held no place, but was well represented by strong personal adherents to himself and his principles. A special election for the presidency was announced by Congress to take place Oct. 1, 1911. Francisco Madero was immediately proclaimed candidate for President, and Jose Pino Suarez, Governor of Yucatan, won the nomination (Sept. 2) for Vice-President. General Reyes, who had arrived from Europe, had a considerable following, but it was finally decided to withdraw his name from any proposition to nominate him as President to head a personal party. He left the capital Sept. 28 for Cuba, determined not to countenance any pretended revolution in his favor, and later, in Oct., from San Antonio, Texas, asserted the same attitude.

Oct. 1, Francisco Madero was elected President of Mexico by about 95 per cent. of all votes cast, Pino Suarez for Vice-President receiving about 30 per cent. of the votes. The election passed off with relative quiet, only a few disturbances and accidents being recorded. On Oct. 15 the 300 delegates of the electoral college met in the halls of the national Congress and cast their ballots in accordance with the above votes; Oct. 22 the Mexican Congress announced the result. Other minor parties were in the field, but had little influence upon the voters. The election seemed fairly conducted. Nov. 4, Señor de la Barra resigned, and Nov. 6 Madero was inaugurated, Suarez becoming Vice-President Nov. 23.

Reconstruction.—The process of reconstruction occupied the entire summer. Not all the insurrectionists laid down their arms at once. The outlying districts could not easily be controlled, and even the cities, especially Puebla, were the scene of unfortunate and occasionally bloody riots. In Torreon many Chinese were massacred, and China immediately instituted a claim for indemnity from which trouble was expected; negotiations concerning this

claim, as well as those from other nations whose citizens had suffered damage, were taken up for adjustment by the provisional government, and Mexico agreed to pay to China $1,550,000 for the 320 Chinese slain. In Mexico City and elsewhere there were numerous strikes, largely from labor troubles, but partly of political origin. Business was disorganized, and the people suffered hardships in many ways. Political disturbances continued. On Nov. 18 Gen. Reyes was arrested by United States officials at San Antonio, charged with violating the neutrality laws. He was released on bail and immediately disappeared, crossing into Mexico, where he endeavored to recruit an army. He was bitterly disappointed in the support he received, and in despair surrendered to Mexican authorities on Dec. 25. Lawlessness, however, was everywhere apparent. The state of Oaxaca seceded (Nov. 25), but negotiations for peace were active. Quiet had not been restored by the end of the year, and the outlook for steady improvement was not the brightest.

Finance.—Nevertheless, considering the tremendous changes that were resulting from reconstruction, the people and the government acted with admirable conservatism and self-control. Financial obligations were scrupulously met; when the new authorities assumed office (May 25) a balance of 62,483,119 *pesos* (about $31,242,500 gold) was found in the treasury, with which fund the debt remaining for the fiscal year (ending June 30) was met, leaving a balance of about 52,000,000 *pesos* ($26,000,000 gold), over and above a gold reserve of 12,000,000 pesos. The customs returns increased for the first half of the year above those of the same period in the previous year, but fell off for the second half; the national railways were reopened for traffic July 14; and in spite of the revolution the National Railways of Mexico was able to borrow (Nov. 10) $13,000,000 for improvements; the Veracruz, Tabasco and Campeche Railway was financed (English capital) and construction work started, somewhat later in the year, and all estimates gave promise that the agricultural crops (corn, wheat and cotton) would be even greater than they had been in 1910. The coffee crop was small but satisfactory. The country began to export petroleum, and international commerce fell off only a little, although general business suffered, as was unavoidable. By July almost all of the United States troops had been retired from the frontier, as no further disturbance in that neighborhood was to be anticipated, but vigilance was constantly maintained. The permission for the use by the United States of Magdalena Bay having expired, Mexico did not extend it. Public improvements, such as the construction of the railway from the Isthmus of Tehuantepec into Campeche, were again taken up. To meet the extraordinary costs of the war, the payment of revolutionary troops, of public works and of reconstruction, loans were proposed by the issuance of national bonds.

Population.—The census, taken during Oct., 1910, showed that the Republic had a population of 15,063,207, an increase of 1,455,948 since 1900.

NICARAGUA

Administration.—The Provisional President of the Republic was Adolfo Díaz, inaugurated May 11, 1911. For the time being, the nation is governed under a provisional law, issued Sept. 15, 1910, by acting President Juan J. Estrada, until a constitutional convention can be held to provide a new constitution. The National Constituent Assembly elected General Mena (Oct. 7) for President for 4 years.

International Relations. — Many concessions, issued by Zelaya, either forfeited or declared illegal, have been repealed during the year as detrimental to the welfare of the country. A new issue of paper currency of 15,000,000 *pesos* (paper *peso* worth about $0.15, but fluctuating) replaced the old issues; this was a temporary measure in expectation of the treaty, signed in the United States, for the refunding of the foreign debt and the development of the country (see V, *International Relations*), sent to the Nicaraguan Con-

gress by the President (Oct. 6), but which has not yet been approved by the United States Senate. A preliminary report on conditions in Nicaragua was made by Ernest H. Wands, appointed by the United States Government as financial advisor to the Republic of Nicaragua, and bankers were selected to study financial conditions. Diplomatic relations were reestablished between the two governments by the appointment as U. S. Minister of Elliott Northcott, who took up his residence in Managua Feb. 14. Greytown (San Juan del Norte) has been declared a free port.

Industries.—Industrial conditions slowly improved, as every indication was given that the disturbances of the past years had ceased. A railway from the Atlantic coast to the west has had preliminary work done on it. The Government has provided for two schools of telegraphy, and in addition to its own wireless stations (one at Bluefields) has authorized others under private ownership. The coffee and sugar crops were satisfactory.

In the early part of the year a severe explosion took place in the arsenal at Managua, killing several persons; it was ascribed to political agency, but without subsequent proof. Dr. Jose Madriz, who had once, after Zelaya's downfall, been President for a few months, died in the City of Mexico in June.

PANAMA

Administration. — The President, Pablo Arosemena, was inaugurated Oct. 5, 1910, to fill the unexpired term of Señor Obaldía, who had died in office. The government arranged during the year for the national elections that are to take place in 1912. Considerable political discussion was active in preparation for that event. Dr. Belisario Porras, the Minister from Panama to the United States, having been transferred from a similar post in Costa Rica, was called back in October (succeeded by Ricardo Arias), after having practically completed the negotiations for the settlement, by arbitration under the decision of the Chief Justice of the United States, of the boundary line between Panama and the Republic of Costa Rica. This boundary, on the Pacific side, has already been accepted about halfway across the isthmus, and on the Atlantic side the decision is virtually ready, but in Oct. it was thought best to send a commission of engineers into the area under discussion in order to report with better knowledge than has ever been available on the physical conditions characterizing the country through which the line is to run.

Railways, Immigration, and Industries.—Apart from the Canal, the Republic of Panama progressed actively during the year. The greatest improvement in a national way was the authorization for raising a loan of $10,000,000 to construct the Panama to David railway; bids for this purpose were advertised for. They were opened Aug. 31, but were unsatisfactory; bills to modify the financial conditions were vetoed (Oct. 15) by the President. Persistent effort has been made to encourage immigration into the Republic (apart from the Canal Zone), and on June 8 a special commissioner for immigration and colonization was appointed to carry propaganda abroad about the general advantages and opportunities in the country. Among industrial improvements should be noted a concession for a sugar plantation and factory near Colon, and the erection of wireless stations, also the agreement for a parcels post with the United States (Oct. 13).

Finance and Education.—Financially the sound basis of last year was maintained. The budget for 1911 and 1912 was fixed at $7,000,000, estimates for income and expenditure balancing at that figure. The Government created a National School of Agriculture, a National School of Telegraphy and a Printing Office, from public funds. The National Institute, in its new buildings in Panama, was formally dedicated June 8; its purpose is to unify and improve the system of higher education of the Republic by merging the High School, the College of Commerce and Languages and the Normal School. The census taken (Sept.) shows a

population (exclusive of Canal Zone) of 336,742, Panama having 36,000 and Colon 18,000.

Marine Transport.—The Atlantic and Pacific Transport Company, to carry on transcontinental, coastwise and foreign commerce through the Panama Canal, to transport passengers and to handle mail contracts with the United States Government, was formed in Sept. Its vessels are to be built in the United States, are to fly the American flag, and to extend our commerce under the advantageous opportunities of the Canal. Panama and the Canal Commissioners are to aid the company in its plans. Funds were not forthcoming, however, and the project was postponed.

PARAGUAY

Centennial.—On July 5, 1911, the Republic celebrated the centennial of its declaration of independence. One of the claims for praise in this regard is that of all the countries of America only Paraguay and Brazil became independent without bloodshed.

Administration. — The President, Gondra, was compelled to resign, Jan. 19, and the Minister of War, Albino Jara, assumed office. On July 5, President Jara was forcibly seized and sent out of the country, and Liberato Rojas, presiding officer of the Senate, was chosen for provisional President. General elections were appointed for Oct. 8. In Nov. political disturbances again took place.

Railways.—July 1, direct connection between Asuncion and Buenos Aires via railways across both countries (excepting a ferry over the Paraná River which will soon carry the cars as well as passengers only, as at present) was established. This makes the trip about 75 hours, not counting stops for transfer (Sunday evening to Wednesday evening in all), as against four to five days by river steamer.

Industries and Finance.—In spite of political disturbances, but on account of material improvements like the railway, the Republic maintained commercial prosperity. An electric plant for Asuncion was authorized, and the extension of the railway eastward from that capital to the Brazilian frontier, which is permitted under concession, was encouraged by the government, but a concession to the Iguazu River was annulled. Part of the foreign debt was paid during 1910. The budget for 1911 (June 5) called for an expenditure of 999,411 *pesos* (gold) and 32,687,-228 *pesos* (paper), the revenues being estimated at 2,738,000 *pesos* (gold) and 9,190,500 *pesos* (paper). A gold *peso* equals about $0.97 gold, and a paper *peso* a little over $0.07 gold. A negotiation for a loan of 25,-000,000 *francs* was authorized.

PERU

International Relations.—In Feb. Peruvian troops entered Ecuadorian territory at Chacras and released two Peruvian prisoners. The Peruvian naval vessel *Grau* brought troops to Tumbez, and a war was threatened, but fortunately no further disturbances took place, as the boundary dispute between Peru and Ecuador is to be settled through the mediation of Argentina, Brazil and the United States. With Chile, diplomatic relations were still dissolved, and the proposed adjustment of the Tacna-Arica question was held in abeyance; but local clashes of natives (Peruvians and Chileans) occurred in those towns. The boundary adjustment between Peru and Bolivia went on uninterruptedly, surveys having been made in 1910, and published in 1911. A slight revolutionary movement was set on foot in Jan., in the South, but it left no later trace. With Colombia there was some disturbance owing to the Peruvian occupation of Puerto Cordova, on the Putomayo River, claimed by Colombia.

Public Works, Transportation, and Commerce.—The Minister of Public Works accepted the harbor improvements in Mollendo, which makes this port safer and more available for shipping, although not up to the demands of the Peruvian and Bolivian commerce passing through it. March 8 a new steamer of the Peruvian

Steamship Company arrived in Callao to enter the service between Peruvian ports and Panama. Two others were expected from France during the year, and seven submarines were ordered in the United States. In the city of Cuzco an electric plant is being installed, and that old Inca and pre-Inca settlement has been considerably modernized otherwise; greatly increased travel thither was noted, and the railway service was therefore improved after the beginning of the year. Commercially, especially in regard to the two great crops of sugar and cotton, Peru was prosperous in 1911, and in financial affairs no setback was experienced. A new Province (Fajardo) was created out of the old Cangallo, what remained retaining the old name. (See XXVII, *Exploration and Discovery.*)

SALVADOR

Administration.—President Manuel Enrique Araujo was inaugurated March 1, 1911, for his constitutional term of four years. He found the country in a healthy condition in all respects, and the year resulted prosperously, both commercially and financially. Economy was exercised in all departments, but the budget for 1911-1912 still left a deficit, the expenditures being set at 13,286,750 *pesos* (a silver *peso* equals $0.391 gold), and the revenue estimated at 13,129,750. The Government during the year established a preparatory school of engineering for special instruction in technical branches for those wishing to study abroad, and passed an employers' liability law applicable to mining companies, factories making explosives and other injurious products, and for transportation and electric companies. The Port of El Triumfo was opened to foreign commerce.

Centennial Celebration.—On Nov. 5 the Government celebrated the 100th anniversary of the first cry for Central American independence, raised in San Salvador.

Central American Medical Congress.—A Central American Medical Congress was held in the city of San Salvador in Nov., at which many delegates from Central American Governments—physicians, dentists, pharmacists and scientific persons in general—were present. The Salvador Government now maintains, under the Minister of Agriculture, an information bureau in the capital, to report upon the orders which the various departments may be considering placing abroad or even at home; this bureau desires to receive all catalogues and price lists that may aid its work.

Debt and Population.—According to official data the total public debt on Jan. 1, 1911, was 32,873,520.67 *colones*, that is, $13,149,408.27 (at $0.40 gold a *colon*). The population is given at 1,070,555 by official estimates, but a census was taken July 1, the results of which are not yet available.

URUGUAY

Administration.—The President of the Oriental Republic of Uruguay, Jose Batlle y Ordoñez, was inaugurated March 1, 1911, this being his second term, as he was President 1905-1907. With his administration many plans for public improvements were carried on during the year. It was assured that the financial condition of the Republic was very sound, so that such improvements were warranted. The political discontent of 1910 seems to have quieted completely, and relations with all foreign countries were cordial. The customs revenue for the fiscal year ending June 30, 1911, amounted to $16,071,311, an increase of $531,697 over the previous 12 months, which indicates a greater foreign commerce for the same period. The charter of the Bank of the Republic was modified so as to make it quite national in character. Part of the Uruguayan debt, due Feb., 1912, was paid off Aug. 10, 1911.

Commerce and Finance.—The budget for the fiscal year 1911-1912, which estimated $23,533,000 for expenses and $28,534,000 for income, thus showing a net balance after payment of all charges, was approved.

New Capitol.—An ambitious pro-

ject of the government is the construction of a new capitol in Montevideo, including new streets and plazas surrounding it; plans for such work were submitted to international competition through diplomatic officers, and bids are to be offered in Jan., 1912. Another action of the government is the encouragement of colonization in the country; land has been set aside for this purpose, and an allowance from Congress given.

Public Works and Transportation.—The Pan-American Railway, a United States organization, began construction work under its concession at Durazno, about the center of the Republic; this line when finished will bisect the country, and in connection with a railway in Brazil will offer a second train service between Rio de Janeiro and Montevideo. Another project in which the government is extremely interested is the erection of a meat slaughter house, copied from Chicago models, in which all meat products are preserved; the government will invest money in the enterprise. Another project approved by the government is the formation of a steamship company to take part in the immense and still growing commerce between Montevideo and Buenos Aires and other River Plate ports; two steamers were commissioned during 1911.

South American Postal Congress.—Of wide interest was the meeting, held in Montevideo in Jan., of the International South American Postal Congress; delegates from all ten of the Republics were in attendance, and several practical arrangements for South American service such as reduced postage, were concluded, while at the same time a permanent postal bureau was established in Montevideo, where general data and direction will be controlled.

International Relations.—Uruguay was represented at very many international gatherings in 1911, and intends from now on to take a prominent place in such meetings; its diplomatic service has been materially strengthened, and the Republic has the credit of having appointed the first woman diplomat, Señorita Clotilde Luisi, who, in Sept., was attached to the legation in Belgium.

VENEZUELA

Centennial.—The most notable event of the year was the celebration, June 24 to July 24, chiefly in Caracas, but also generally throughout the Republic, of the centennial anniversary of the declaration of independence. It was a gathering international in character, as delegates from most Republics in Latin America were present, and from Italy, Spain, and the United States. In addition to the usual ceremonies commemorative of such events, Venezuela erected several material monuments to perpetuate the event, especially in Caracas, so that already fine city bids fair to become thereby one of the most attractive, artistically, in America.

Bolivian Congress.—Another international meeting, taking place in Caracas at the same time as the centennial, was the so-called Bolivian Congress, at which delegates from Bolivia, Peru, Ecuador, Colombia and Venezuela convened. Its purpose had but little political significance, but was confined principally to formulation of plans whereby post, railway, steamer and telegraph connection between these countries can be improved, an office for the study of agricultural and similar conditions opened, the laws for all courts simplified, and other international agreements carried out. (See V, *International Relations.*)

Castro.—In the early part of the year Cipriano Castro, whose position as President of the Republic was assumed by General Gomez, made his way from Europe into Venezuela; newspapers reported that he intended to start a revolution and some alarm was felt that the results might be disastrous to the country's increasing prosperity, but Castro disappeared, and no authentic information was received as to his whereabouts, although rumors of his movements were active through November.

Finance.—The budget for 1911-1912 was fixed at 51,131,250 *bolivares* (*bolivar* equals about $0.20 gold), income and expenditure being made to balance at that figure. Venezuela has met the payments on the foreign obligations with notable

punctuality, and with the increased vigor in commerce and the determination of the nation to grow industrially, 1911 passed encouragingly. Coffee, cacao and sugar crops, the staples, resulted favorably.

Industry and Transportation.—As a proof of this modern spirit can be cited the operation of the modern frozen-meat plant in Puerto Cabello, which sent quantities of its product to Europe and has stimulated the cattle market in its neighborhood. A new cotton mill was contracted for in Maracaibo, arrangements were made for a sugar refinery near Valencia, and several cities installed ice, electric light and power plants. In Ciudad Bolívar on the Orinoco River contracts were let for many modern houses, for the construction of a theater, sanitary water and sewer service and a tramway system. An important development was the concession granted for the National River Navigation Company, by which coastwise service from Ciudad Bolívar to Maracaibo is brought under one management, and in connection with it the canalization of rivers in the Republic, colonization and other public improvements are assured. This company has already ordered the construction of a vessel in the Puerto Cabello Navy Yard. The Hague tribunal decided the case of the Orinoco Steamship Company in favor of that company for $54,000.

Population.—According to the estimates of the statistical department the population at the beginning of 1911 was 2,713,703.

CANADA

ERNEST H. GODFREY

Events of far-reaching importance occurred in Canada during 1911. They may be reviewed first in their relation to the great friendly Republic of kindred origin across the southern border; secondly, as bearing upon Canada's connection with the Motherland and British Empire; and thirdly, as matters of purely domestic significance.

The Reciprocity Agreement.—On Jan. 25, the Canadian Ministers of Finance and Customs (Hon. W. S. Fielding and Hon. William Paterson) returned from Washington with the text of a provisional agreement for settlement of the future trading relations of Canada with the United States upon the basis of reciprocal free trade in natural products. Communicated to Parliament next day, it was found that the agreement provided *inter alia* for the total abolition, as between the two countries, of the duties on live stock, cereals, fruits, vegetables, fish, dairy and other products, for identical and reduced duties on meat, flour, agricultural machinery and implements, coal and other mining products, and for specific duties on certain articles imported by Canada from the United States, and upon certain other articles imported by the United States from Canada. In letters exchanged on Jan. 21 between the Canadian Ministers and the U. S. Secretary of State (Hon. P. C. Knox) it was decided that the proposed changes should not take the formal shape of a treaty, but that the governments of the two countries should use their utmost efforts to bring about such changes by concurrent legislation at Washington and Ottawa. Resolutions designed to give effect to the agreement were introduced on the same date, and a prolonged debate ensued. On Feb. 22, the House of Commons, on the motion of F. D. Monk, adopted a resolution which stated that before resuming the discussion, and with a view to dispel the feeling of unrest created in Canada by comments made in both countries as to the political consequence of the agreement, the House wished to affirm emphatically its determination to preserve intact the bonds which unite Canada to the British Empire, and the full liberty of Canada to control her fiscal policy and internal autonomy. The government resolutions continued to be debated at great length until May 3. On May 19, Parliament adjourned for two months for the Imperial Conference and the coronation of King

George. Reassembling on July 18, the discussion of the reciprocity resolutions was again resumed; but in consequence of the determined hostility of the Opposition, no progress was made toward their adoption. On July 29, Parliament was suddenly dissolved, the question of reciprocity being thus submitted to the judgment of the Canadian people. A general election on September 21 resulted in the return of a Conservative majority of about 45, entailing, therefore, the overthrow of the Laurier administration and the rejection of the reciprocity agreement. (See also IV, *American History;* V, *International Relations;* and XIV, *Public Finance.*)

The Coronation.—At the coronation in Westminster Abbey on June 22 of King George V and his consort, Queen Mary, Canada was represented by Sir Wilfrid Laurier and other members of the Dominion Government, while delegations from the Dominion and provincial legislatures also attended the coronation ceremonies. A contingent of Canadian troops assisted in lining the processional routes in London. Canadian cadet and boy scout organizations were represented by special delegations. Throughout Canada, the day of the coronation was observed as one of general rejoicing and thanksgiving.

The Governor-General.—From 1904 to 1911 the position of Governor-General of Canada has been filled by Earl Grey with marked ability, distinction, and success. His term of office closed finally in October, and he sailed from Quebec for England on the 12th of that month. For some time it had been generally understood that, if circumstances permitted, the Duke of Connaught would succeed Lord Grey, in fulfilment of the wishes of the late King Edward, who had desired to pay this special compliment to the Dominion.

His Royal Highness was formally gazetted as Governor-General and Commander-in-Chief of the Dominion of Canada for a period of two years on Mar. 21. He was welcomed at Quebec on Oct. 13 and at Ottawa on Oct. 15, when he took up his official residence at the Government House.

The Imperial Conference.—An active share was taken by Canada in the proceedings of the Imperial Conference, held in London from May 23 to June 20. As at the previous Conference in 1907 the Dominion was represented by Sir Wilfrid Laurier (Premier), Sir Frederick Borden (Minister of Militia and Defense), and the Hon. L. P. Brodeur (Minister of Marine and Fisheries). Colonial Conferences synchronising with great imperial events, such as the jubilee celebrations of Queen Victoria, and the coronation of King Edward, have been held since 1887, but the Conference of 1907, pursuant to resolution of the Conference of 1902 affirming the expediency of quadrennial Conferences, was the first to meet independently of any extraneous event. In 1907, too, the change of title from Colonial to Imperial Conference signified that thenceforth these Conferences were to be regarded not so much as gatherings by which the Imperial government called the Colonial governments into consultation with itself, but rather as those wherein the representatives of the United Kingdom and of the overseas Dominions met upon an equal footing with one vote for each government, and with the Imperial government, whose Premier presides, as only *primus inter pares.* Twenty-eight resolutions embodying decisions upon a great variey of subjects were adopted by the Conference. Those in which the Dominion of Canada was more particularly interested relate to the abrogation in commercial treaties of clauses hampering Canadian relations with other countries and to the general development of Canadian trade. (See VI, *The British Empire.*)

The general prosperity which happily marks the present condition of Canada shows no signs of abatement. On the contrary continued and important progress during 1911 is everywhere apparent. Prime factors in this prosperity are railway development, immigration, the settlement of new lands and the exportation of surplus products.

Railways.—Progress in new railway construction and development continues with unabated vigor. The

eastern portion of the new Transcontinental Railway, which is under construction by Government Railway Commissioners, comprises a total mileage of 1,805, extending from Moncton in New Brunswick to Fort Garry Station, Winnipeg, in Manitoba. During the past season about 300 miles of track have been laid on the main line of this division, which, with 238 miles of sidings, make a total of 1,483 miles of track laid to the end of September. At that date also 1,086 miles of telegraph line were completed. On the western division, which is under construction by the Grand Trunk Pacific Railway Co., track laying was extended from Wolf Creek, Alberta, the terminus of the prairie section, 916 miles west of Winnipeg, to Fitzhugh, Alberta, 1,027 miles west of Winnipeg; the construction work on the roadbed from Fitzhugh to Tête Jaune Cache, 1,094 miles west of Winnipeg, is being pushed forward day and night. In Manitoba, Saskatchewan and Alberta the company have at present partially completed and under construction about 1,400 miles of branch lines. Altogether about 1,860 miles are now under complete or partial operation on the western division of the new railway. A third transcontinental railway is in process of rapid construction under the Canadian Northern Railway system. West of Port Arthur about 4,000 miles of railway are in operation by the Canadian Northern Railway and to the east of Port Arthur there are 1,755 miles of railway controlled and operated by the companies forming part of the system, the total mileage of which east and west is approximately 5,854 miles. According to the official railway statistics of the Department of Railways and Canals for the year ended June 30, 1911, the total railway mileage of the Dominion (not including 7,000 miles under construction, was 25,400, an increase of 669 miles over the previous year. During the same year $118,391,214 was added to the capital liability of the railways, bringing the total up to $1,528,689,201, of which $749,207,687 was represented by stocks and $779,481,514 by bonds.

Immigration.—The number of immigrants continues annually to increase. In the year ended Mar. 31, 1911, the number was 311,084, including 123,013 from the United Kingdom, 121,451 from the United States, and 66,620 from other countries. The total is larger than in any previous year and compares with 208,794 in 1909-10, 146,908 in 1908-09 and 262,469 in 1907-08. At the same time, the standard of immigration has been raised by the enforcement of regulations rigidly excluding the unfit. For the first eleven months of the calendar year 1911, the total number of immigrants into Canada was 339,714, of whom 141,837 were from the United Kingdom, 125,399 from the United States, and 72,478 from other countries. For the entire calendar year the total will exceed 350,000.

Agriculture.—Upon the whole, the agricultural season of 1911 proved a favorable one, though prolonged drouth in the east and a cold, wet ripening period, with storms and frosts in the west, depreciated quality and lessened the yields which early conditions had promised. The following statement shows, subject to revision, the areas of the principal cereal crops in Canada according to the census of June 1, 1911, with the latest available estimates of the yields of the past season based thereon:

Crop.	Area.	Yield per acre.	Total yield.
	Acres.	*Bush.*	*Bush.*
Fall wheat...	1,169,000	22.6	26,479,000
Spring wheat.	8,919,000	19.8	176,518,000
All wheat..	10,088,000	20.1	202,997,000
Rye.....	149,000	20.2	3,007,000
Barley.....	1,387,000	31.4	43,579,000
Oats.....	9,330,000	37.4	348,774,000
Corn for husking.....	320,000	53.6	17,159,000

Note.—Bushels of weight, 60 lb. wheat, 56 lb. rye and corn, 48 lb. barley, 34 lb. oats.

The total production of wheat is larger than in any previous year in the history of the Dominion.

Commerce.—Canada's total trade with foreign countries for the fiscal year ended Mar. 31, 1911, amounted in value to $769,443,905, inclusive of coin and bullion, as compared with

$693,211,221 in 1909-10, an increase of $76,232,684 or 11 per cent. The imports amounted to $472,247,540 and the exports to $297,196,365. The value of imports from Great Britain was $110,586,801, from the United States $294,415,202, and from other countries $67,245,537. Exports to Great Britain were valued at $136,962,971, to the United States at $112,223,401, and to other countries at $48,009,993.

Revenue.—During the past two years the public revenue of Canada has on each occasion been the highest reached, and substantial surpluses have enabled the Minister of Finance to provide considerable sums for capital expenditure out of revenue. For the fiscal year 1910-11 the revenue reached the total of $117,780,410. The expenditure was $87,773,998, and out of the surplus of $30,006,412 it was possible to provide for all the capital and special expenditure for the year 1910-11 other than that of the National Transcontinental Railway, for which, however, out of the surplus revenue a sum of $18,506,086 was available. During the rest of the year 1911 the Canadian revenue has continued to expand.

Census.—According to the results of the fifth census of Canada, taken as on June 1, 1911, the population of the Dominion by provinces and territories compared with 1901 was as in the following statement. The figures are subject to revision after completion of the returns, and the total will probably exceed 7,200,000.

The New Government.—In consequence of the defeat of the Liberal party at the polls on Sept. 21, to which reference has already been made, Sir Wilfrid Laurier and the other members of his administration, after winding up the business of their respective Departments, resigned office on Oct. 6, and R. L. Borden, the leader of the Opposition, undertook the formation of the ninth Ministry in the twelfth Parliament of the Dominion. His Cabinet was completed on Oct. 10, and the names of the new Ministers with their offices are as follows: R. L. Borden (premier and president of the Privy Council), George E. Foster (Trade and Commerce), Martin Burrell (Agriculture), Robert Rogers (Interior), Frederick D. Monk (Public Works), Francis Cochrane (Railways and Canals), William T. White (Finance), Louis P. Pelletier (Postmaster General), John D. Hazen (Marine and Fisheries and Naval Service), Charles J. Doherty (Justice), Col. Samuel Hughes (Militia and Defense), William J. Roche (Secretary of State), Thomas W. Crothers (Labor), Wilfrid B. Nantel (Inland Revenue and Mines), John D. Reid (Customs), George H. Perley, Albert E. Kemp, and James A. Lougheed (without portfolios).

Session of 1911-12.—The first session of the twelfth Parliament of the Dominion was opened at Ottawa by H. R. H. the Governor General in person on Nov. 15. The speech from the throne indicated as principal subjects of proposed legislation the pro-

Provinces and Territories.	1911.			1901.		
	Males.	Females.	Total.	Males.	Females.	Total.
Prince Edward Island	47,065	46,657	93,722	51,959	51,300	103,259
Nova Scotia	251,019	241,320	492,339	233,642	225,932	459,574
New Brunswick	179,865	172,023	351,888	168,639	162,481	331,120
Quebec	1,012,506	992,799	2,005,305	824,454	824,444	1,648,898
Ontario	1,299,403	1,223,955	2,523,358	1,096,640	1,086,307	2,182,947
Manitoba	250,196	205,673	455,869	138,504	116,707	255,211
Saskatchewan	289,114	198,778	487,892	49,431	41,848	91,279
Alberta	224,417	151,017	375,434	41,019	32,003	73,022
British Columbia	243,835	136,952	380,787	114,160	64,497	178,657
Yukon Territory	.....	.....	9,000	23,084	4,135	27,219
Northwest Territories	7,930	7,763	15,693	10,176	9,953	20,129
Totals	3,805,350[1]	3,376,937[1]	7,191,287	2,751,708	2,619,607	5,371,315

[1] Not including the Yukon Territory, for which the figures by sexes are not available at the time of writing.

vision of better roads, greater aid and encouragement for agriculture, government control and operation of the terminal elevators on the Great Lakes and the establishment of a permanent tariff commission. The debate on the Address in reply to the speech lasted until Nov. 29, and on Dec. 7 Parliament adjourned over the Christmas recess until Jan. 10, 1912. On Oct. 23 the Hon. Auguste Landry was appointed to the Speakership of the Senate, and on Nov. 15 Dr. T. S. Sproule was elected Speaker of the House of Commons.

Legislation.—The third session of the eleventh Parliament of the Dominion of Canada was held at Ottawa from Nov. 17, 1910, to July 29, 1911, with adjournment from May 19 to July 18 to enable members to visit England for the coronation of King George. The following is a brief synopsis of the more important of the public and general acts, which numbered 28.

Chapter 6 grants aid toward the construction of the Canadian Northern Ontario Railway, which will eventually form part of a third transcontinental line between the eastern and western limits of the Dominion, which aid takes the form of a guarantee by the Dominion Government of the principal and interest of the bonds, debentures, debenture stock or other securities of the company to the extent of $35,000 per mile for a total mileage not exceeding 1,050.

Chapter 7 continues the existing customs tariff upon importations from Japan for two years from July 17, 1911, with a view to the negotiation within that period of a new commercial treaty between Canada and Japan, the Dominion Government having decided not to adhere to the commercial treaty recently concluded between Great Britain and Japan. The act is subject to the proviso that Canadian imports into Japan shall not be liable to duties or restrictions different from those imposed by Japan upon imports from other countries.

By Chapter 16 the Canadian Medical Act is amended, chiefly to provide for the general and uniform registration of medical practitioners throughout Canada; so that any medical practitioner qualified to practise medicine in any of the provinces may be entitled, after passing the examination of a Central Council, to practise all over Canada. Physicians of ten years' standing may, on conditions, so practise without examination. The act will not come into force until all the provinces shall have enacted legislation accepting its provisions.

The Opium and Drug Act (c. 17) prohibits the importation, manufacture, sale or possession, for other than scientific or medicinal purposes, of the drugs, cocaine, morphine, opium and eucaine. Persons infringing the act are rendered guilty of a criminal offense and are liable to a fine or imprisonment, or both.

Chapter 23 is a re-enactment of the Seed Control Act of 1905, with amendments shown to be desirable by experience. The act provides for the grading of timothy, red clover, alsike and alfalfa seeds as "Extra No. 1," "No. 1," "No. 2," and "No. 3," and states the maximum proportion of weed seeds to be allowed in each grade. The names of noxious weeds are not specified in the act, as was previously the case, but the Governor in Council is empowered to make regulations determining (*a*) the species of farm weeds that are to be deemed as "noxious weeds"; (*b*) the maximum proportion of seeds of noxious weeds tolerated in non-graded seeds; and (*c*) percentage standards of vitality.

Chapter 25 empowers the Governor in Council to subsidize a steamship service between the Pacific Coast of Canada and China and Japan for a period not exceeding ten years, the amount of the subsidy not to exceed £25,000 sterling ($121,667) per annum.

Chapter 28, passed May 19, confirms and sanctions the Waterways Treaty of Jan. 11, 1909, relating to the boundary waters and questions arising along the boundary between Canada and the United States. Provision is made for an annual appropriation not exceeding $75,000 for the salaries and expenses payable by Canada in connection with the Joint International Commission established by article 7 of the treaty.

THE BRITISH EMPIRE

FRANCIS G. WICKWARE

GREAT BRITAIN

Parliament.—In the second Parliament of George V, which assembled Jan. 31, the House of Commons was constituted as follows:

Liberal coalition: Liberals, 271; Laborites, 43; Nationalists, 73; Independent Nationalists, 11. Total, 398.
Unionists: 272

J. W. Lowther was again chosen Speaker of the Lower House. Parliament was formally opened Feb. 6.

Reform of the House of Lords.—On Feb. 16, Premier Asquith's motion taking over the whole time of the House of Commons until April 13, in an effort to dispose of the Veto bill before the coronation, was adopted, and on Feb. 21 the bill was introduced in the Commons in its original form.

The government plan for the reform of the Upper House was thus set forth in the veto resolutions adopted April 4, 1910 (see AMERICAN YEAR BOOK, 1910, page 65):

It is intended to substitute for the House of Lords as at present constituted a second chamber on a popular instead of hereditary basis, but as such substitution cannot be immediately brought into operation the existing powers of the House are to be restricted.

The House of Lords is to be denied the power of rejecting or amending a money bill. A measure shall be considered a money bill which, in the opinion of the Speaker of the House of Commons, contains only provisions dealing with all or any of the following subjects, namely: The imposition, repeal, remission, alteration, or regulation of taxation; charges on the Consolidated Fund or the provision of money by Parliament; supply; the appropriation, control, or regulation of public money; the raising or guarantee of any loan, or the repayment thereof; or matters incidental to those subjects or any of them.

When any measure other than a money bill has passed the Commons in three successive sessions it shall become law, notwithstanding its rejection or amendment by the Lords, provided that at least two years have elapsed between the introduction of the bill into the House of Commons and the date on which it passes that house for the third time.

The duration of Parliament is to be limited to five years.

The bill passed its first reading in the House on Feb. 22, and its second reading on March 2. The committee stage began on April 3, and continued to May 3. Of the many amendments offered, those accepted by the government were limited practically to improvements in phraseology, and the bill passed its third reading in the Commons on May 15, by a vote of 362 to 241, without fundamental change.

Meanwhile the Lords had been maturing their own plan of reform. An announcement early in the session of the readiness of the Peers to negotiate with the government on "the necessary changes in the constitution of the upper chamber and the relations between the two houses" having met with no response, Lord Landsdowne announced on Feb. 22 his intention to submit a new bill to amend the constitution of the Upper Chamber. The measure introduced and passed on first reading May 8, proposed an Upper House of 343 members, constituted as follows:

One hundred members elected by the whole body of hereditary peers from among those hereditary peers possessing any of the qualifications set out in a long schedule of offices, diplomatic, military, naval and administrative; 120 elected for electoral districts by electoral colleges composed of the members of the House of Commons from constituencies within the district; 100 appointed on the advice of the ministry of the day, in proportion to the strength of parties in the Commons; the Archbishops of Canterbury and York, and five elected bishops; 16 peers who have held high judicial office; the term of office of a Lord of Parliament to be 12 years, one-fourth of each category retiring every third year; Peers qualified by high judicial office to sit for life; elections to secure the repre-

sentation of minorities; creation of new hereditary peerages limited to not more than five in any one year, excepting from this provision persons already hereditary peers or who are, or have been, cabinet ministers; peers not Lords of Parliament to be eligible for election to the House of Commons.

The government bill reached the Upper House on May 16, and passed its first reading the same day. The debate on the two measures then proceeded concurrently, the Lansdowne bill reaching its second reading May 22, and the government bill a week later. On June 29, Lord Cromer's amendment to the money-bill clause of the government bill, substituting for the Speaker a Joint Committee as the tribunal to decide what bills are purely money bills, was adopted. On July 5, the Lords adopted by a large majority the official Opposition amendment to the second clause, providing that no bill affecting the Crown, the succession, or the Union, or judged by the Joint Committee to raise "an issue of great gravity," should become law under the Veto bill before being referred to a poll of the people. With these and other minor amendments, the Lords passed the Veto bill on its third reading on July 20, and sent it back to the House of Commons.

The next day Premier Asquith addressed a letter to Mr. Balfour, declaring that the King would feel it his duty, if so advised by his ministers, to create a number of peers sufficient to ensure the Veto bill becoming law in substantially the same form in which it left the Commons. At a meeting of the Unionist peers the same day, at which this letter was read, Lord Landsdowne made it clear that, in his opinion, the Peers were no longer "free agents," and that therefore circumstances had arisen in which it would be impossible any longer to resist. A large number of Unionist peers concurred in this opinion, but a minority of "die-hards" or "last-ditchers" persisted in demanding that the Lords refuse to surrender. Their sympathizers in the Commons were responsible for a scene of unparalleled violence and disorder when Mr. Asquith rose on July 24 to justify the government's rejection of the Lords' amendments. For the first time in the history of the House the Premier was refused a hearing, and after facing a storm of derisive outcries for some time, was finally obliged to sit down. One of the leaders of the tumult, on attempting to speak later, was howled down by the Liberals, and the Speaker found it necessary summarily to adjourn the House without the motion put, a power exercised but once before.

The Commons considered the Lords' amendments on Aug. 8, the government granting only small modifications, the most important allowing the Speaker the assistance of two other members of the House of Commons in making his decisions as to money bills. The same day the Lords passed a vote of censure on the government by a majority of 214, the last defiance before capitulation. The return of the bill to the Lords confronted the peers with the alternative of repudiating their amendments or of forcing the creation of 300 to 400 new peers. Fortunately, the wiser counsels of the leading Unionist organs and of the Opposition leaders in the Upper House prevailed over the heroics of the "die-hards," and on Aug. 10, by a majority of 17 in a total vote of 245, more than 300 peers refusing to vote, the Veto bill passed the Lords. The Royal assent, on Aug. 18, admitted to English constitutional law the most momentous legislation since the Reform bill of 1832.

Invalidity and Unemployment Insurance.—Lloyd-George's bill providing for the establishment of national insurance against invalidity and unemployment was introduced in the House of Commons on May 4. The scheme is divided into two parts—insurance against sickness and insurance against unemployment. Invalidity insurance is open to all workers, male and female, between the ages of 16 and 65, whose incomes are below the limit of the income taxation, £160 per year. Weekly payments to the fund are made by the worker, his employer, and the State, for each individual insured. The sick benefits include free drugs and medical attendance, weekly allowances of money during invalidity,

a special maternity grant for women workers, free sanatoria for tuberculosis cases, and in case of permanent disability through sickness a life pension. So far as possible approved Friendly Societies are to provide the distributing machinery.

Unemployment insurance, which is to affect, for the present, only the engineering and building trades, is to be compulsory. Contributions to the fund are to be made by the workers, the employers, and the State. An allowance of 7s. is to be paid for 15 weeks in cases where unemployment is not due to strike, lock-out or dismissal for misconduct. The machinery of the scheme is to be provided by the labor exchanges.

It is estimated by the government that the invalidity-insurance scheme will apply to 14,700,000 persons, and, when fully organized, will cost £4,500,000 per year. The State contribution to the unemployment scheme is estimated at £750,000 per year.

The bill was still in the committee stage when the House adjourned on Aug. 22. The general principle of the bill was approved, but many of its details were attacked, even the Labor Party and the Socialists opposing the measure. Debate was resumed immediately after the reassembling of Parliament on Oct. 24, and the third reading was finally reached Dec. 6. On the same day the bill passed its first reading in the Lords, its second on Dec. 11, and its final stage on Dec. 15. It now requires only the Royal assent to become law.

The Budget.—The budget for 1911-12, presented by Mr. Lloyd-George on May 16, contrary to expectation imposed no new taxes on the country. The revenue was estimated at £181,716,000, made up as follows:

Customs and excise	£69,600,000
Death duties	25,150,000
Stamps	9,600,000
Land tax and house duty	2,700,000
Property and income tax	44,300,000
Land value duties	700,000
Postal, telegraph and telephone services	25,740,000
Crown lands	500,000
Suez Canal shares and sundry loans	1,226,000
Miscellaneous	2,200,000

The expenditures were estimated at £181,379,000, £17,551,000 less than the preceding year, notwithstanding an increase of naval expenditure by £3,788,800 to £44,392,500. The cost of old-age pensions, originally estimated at between £6,000,000 and £7,000,000 a year, has leaped to £12,415,000. The budget contained provision for the payment of members of the House of Commons (£252,000), and for the preliminary expenses of the Insurance bill (£50,000). Disability and unemployment insurance, Mr. Lloyd-George estimated, would cost in 1912-13, £2,500,000, and in 1914-15, £4,781,000.

Payment of Members of Parliament.—On Aug. 10, the House of Commons adopted a resolution introduced by Mr. Lloyd-George in favor of the payment of members. As noted above, the budget contained an item of £252,000 for this purpose, payment being at the rate of £400 per year. This radical departure from the traditions of the British Parliament was widely opposed, several members refusing to accept payment and either returning their cheques or donating them to charity.

The Imperial Conference of 1911 met in London from May 23 to June 30. The most important of the resolutions adopted provided for: (1) The opening of negotiations by the Imperial government "with the several foreign governments having commercial treaties which apply to the overseas dominions, with a view to securing liberty for any of those dominions which may so desire to withdraw from the operation of the treaty without impairing the treaty in respect of the rest of the Empire," the object of this resolution being the ultimate abrogation of most-favored-nation clauses in certain ancient treaties made by Great Britain; (2) the consultation of the dominions by the Imperial government as to international agreements affecting them; (3) the appointment of a Royal Commission to investigate and report upon the natural resources of the Empire; (4) the admission of colonial Premiers to the Imperial Council of Defense; (5) the enforcement of commercial arbitration awards in one part of the Empire in

all other parts of the Empire; and (6) the establishment of Imperial postal orders.

Questions of imperial defense were discussed at special conferences with the British Admiralty and War Office. In regard to the naval services and forces of both Canada and Australia, the principle was affirmed that these should be under the control of their respective governments, the naval stations for each dominion were defined, and rules of naval etiquette and procedure adopted.

The Declaration of London.—Strong opposition to the ratification of the results of the International Naval Conference of 1908-9, known as the "Declaration of London," developed early in the year. A committee of the London Chamber of Commerce, considering the matter from a commercial and national standpoint, reported that the Declaration appeared to have been framed without sufficient regard to the fundamental difference between the situation of Great Britain, an island without neutral ports to fall back upon, which has to import most of its food supplies, and that of most continental countries, connected with various neutral ports and largely self-supporting. It based its opposition to ratification specifically upon the objections: (1) that it alters the law of nations as hitherto maintained in such a manner as to expose to capture food supplies borne to any British port in neutral vessels; (2) that it contains no provision for preventing the conversion of merchant vessels into commerce destroyers; and (3) that the admission of the principle of the destruction of neutral prizes would be in the highest degree prejudicial to the interests of Great Britain.

The Imperial Conference, on the other hand, approved of the ratification of the Declaration, Australia alone dissenting. The debate on the Declaration in the Commons revealed a strong feeling of opposition to its principles; nevertheless the "Naval Prize bill" passed the Lower House on Dec. 7. It was rejected by the Lords on Dec. 12 by a vote of 145 to 53. The defeat of the bill will delay the ratification of the Declaration of London by at least two years.

The Cabinet.—Late in October, important Cabinet changes were announced. Winston Spencer Churchill, the Home Secretary, became First Lord of the Admiralty, while Reginald McKenna laid down the Admiralty portfolio to assume the Home Secretaryship. Earl Carrington, President of the Board of Agriculture, became Lord Privy Seal. C. E. H. Hobhouse, Financial Secretary to the Treasury, was appointed Chancellor of the Duchy of Lancaster. Walter Runciman retired from the Presidency of the Board of Education to become President of the Board of Agriculture, while the Presidency of the Board of Education was assumed by J. A. Pease, Chancellor of the Duchy of Lancaster. It was rumored that the Cabinet reorganization was a preliminary to the promotion of Premier Asquith to the House of Lords, but up to the end of the year his elevation to the Peerage had not occurred. Churchill's unpopularity with the laboring classes after his use of the military for the maintenance of order during the railway strike was generally regarded as the immediate cause.

The Unionist Party.—On Nov. 8, the Right Hon. Arthur J. Balfour announced his resignation of the leadership of the Unionist Party. Mr. Balfour entered political life 35 years ago, and after holding several administrative posts, was chosen leader of the Unionist Party in the Commons in 1891. His tenure of leadership, therefore, is the longest in Parliamentary history, with the single exception of Pitt's. Ill health was given as the reason for his withdrawal from active leadership, but the actual cause was the schism in the Unionist Party, which culminated, after the passage of the Veto bill, in open opposition to Mr. Balfour by the ultra-conservative element.

At a meeting of the Unionist Party on Nov. 13, Andrew Bonar Law was chosen leader in the House of Commons. Mr. Law is a native of New Brunswick, Canada, 53 years of age, and has been a member of Parliament since 1900. He has never had a seat in any cabinet, and his selec-

tion over the heads of older members of the party with cabinet and longer parliamentary experience was unexpected. Rivalry between Austin Chamberlain and Walter H. Long, however, forced a compromise. Mr. Law is a brilliant speaker, ready in debate, and possesses the qualities of leadership. His strong tariff reform principles are expected to unite the Unionist Party on this platform.

The Coronation.—During May and June the coronation of George V and his consort, Queen Mary, absorbed the interest of the British people. The actual coronation ceremony on June 22 was the culmination of a long series of functions connected with the coronation festival. Vast historical pageants were held, and a number of important monuments were unveiled, the most prominent being the Victoria Memorial, in London, at the unveiling of which on May 16 the German Emperor assisted. Events of importance subsequent to the coronation were the naval review at Spithead, June 24, and the investiture of the young Edward Albert, Prince of Wales, at Carnarvon, Wales, on July 13. The United States was represented at the coronation ceremonies by John Hays Hammond.

Labor Troubles.—The year was marked by industrial warfare of unprecedented extent and violence. Following refusal of a demand for a conciliation board and the establishment of a minimum wage, a strike of seamen was begun on June 14, which gradually extended to all the principal ports of the United Kingdom. In several centers the seamen were joined by dockers and carters, and the general tie-up of shipping seriously threatened the food supply of the country. The strike was accompanied by serious rioting, especially in Manchester and Glasgow. After the first of July settlements were made in the various ports, generally on the basis of substantial concessions to the men, and on July 28 the strike was officially declared ended.

The peace, however, was short-lived. On Aug. 1, a dispute over the terms of settlement led to a strike of dock laborers in London, which by Aug. 10 had spread to involve over 100,000 men in the dock, lighter, and carting trades. In Liverpool, the men refused to accept the terms made by their leaders and violent riots were of daily occurrence. On Aug. 14, the shipowners declared a lock-out; the strike committee immediately retaliated by calling out all transport workers. In the meantime, the strike of the London transport workers had been settled (Aug. 12), the men receiving the concessions demanded. The British railway workers now began to show signs of unrest, and on Aug. 15 the four great railway unions decided to call a general railway strike at the end of twenty-four hours if the demands of the men were not acceded to.

The grievance of the railwaymen was the working of the conciliation scheme devised by Lloyd-George and accepted by the railway companies and men in 1907 for a period of seven years. The agreement prescribed that all disputes should be settled by conciliation boards, and that in no case should a strike be declared before 1914. While admitting the fairness of the scheme and the equitable decisions of the arbitrators, the men have complained constantly of the delays in the settlement of disputes.

On Aug. 16 and 17 the Prime Minister and Sidney Buxton, President of the Board of Trade, were in conference with the union leaders in an effort to avert a strike. Mr. Asquith suggested the appointment of a Royal Commission to investigate the working of the conciliation act. The proposal was immediately accepted by the railway companies, but the men persisted in demanding direct negotiation with the railway officials. The strike order was issued on the evening of Aug. 17. Troops were immediately distributed in great force throughout the strike area, more than 50,000 being on duty in London alone. The only serious collision between the military and the strikers occurred at Llanelly, Wales, although rioting was general in all the large railway centers. The railway men were joined in several towns by tramway, gasworks and electrical employees, and it was estimated that 400,000 men were affected. Except in the north of England, however, traffic was not seriously dislocated. In the neigh-

borhood of London, an efficient, though restricted, railway service was maintained. Liverpool was most seriously affected; when the end of the strike came, not more than 48 hours' food supply remained in the city.

A settlement was reached on Aug. 19, after protracted negotiations between the government, the railway companies and the representatives of the unions. The agreement provided for the reinstatement of the strikers, the immediate convening of the conciliation boards to deal with matters in dispute, and the appointment of a Royal Commission to inquire into the working of the conciliation act, a settlement which a leading technical journal characterized as "peace without honor." It was not wholly satisfactory to the men, but the majority of the strikers immediately returned to work.

The Commission of Inquiry, headed by Sir David Harrel, reported late in October. In general, the conciliation scheme was approved, but some improvement and simplification of procedure were suggested. The recognition of the unions by the railway companies was expressly discouraged, and this feature of the report was extremely distasteful to the men. Subsequently, however, the government prevailed upon the railway companies to meet the representatives of the employees, and it was announced in December that a series of friendly conferences, while leading to no definite result, had established more satisfactory relations.

On Sept. 18 a general strike of railway employees in Ireland was declared on grounds so flimsy as entirely to alienate public sympathy. The railway companies affected assumed an uncompromising attitude and completely routed the unions. After a fortnight marked by more or less rioting, the strike collapsed on Oct. 4, and the men returned to work on the companies' terms.

On Oct. 10, the Board of Trade announced the institution of an Industrial Council, the results of which will be watched with interest. Employers and workmen have equal representation (13). In the first instance the members are to hold office for one year. The purpose of the Council is to consider and inquire into matters referred to them affecting trade disputes; and especially to take suitable action in regard to any dispute referred to them affecting the principal trades of the country, or likely to cause disagreements involving ancillary trades, or which the parties before or after the breaking out of a dispute are themselves unable to settle.

Late in December a lock-out affecting over 160,000 workers, was declared in the textile trades. The unions had been engaged in a bitter campaign for the general establishment of the closed shop. Counting on the disinclination of the manufacturers to lose the profits of an unusually favorable season, they had demanded the dismissal of non-union workers. The prompt refusal of the employers to grant any concessions of this kind came as a complete surprise, and conditions point to an early settlement of the trouble.

The Census of 1911.—Provisional results of the census taken early in the year show the population of the United Kingdom to be 45,216,741, an increase of 3,758,020 in ten years. The population of England and Wales has increased 10.91 per cent. to 36,075,269, and of Scotland 6.4 per cent. to 4,759,521; while the population of Ireland has declined 1.7 per cent. to 4,381,951. The population of London has increased 10.2 per cent. to 7,252,963. Country population in England has increased more rapidly than formerly, though rural depopulation is still a serious problem. The slight decrease in the figures for Ireland show a checking of emigration. The small increase in Scotland is much less encouraging than the record for Ireland: the rate is much lower than that revealed by any previous census.

AUSTRALIA

The Constitutional Amendments.—On April 26, two propositions which passed the Australian Parliament on Nov. 16, 1910, and embodied the most important features of the ministerial policy of Premier Fisher and the labor party in control of the govern-

ment of the Commonwealth, were submitted to a referendum vote. Both were defeated by large majorities. Both acts were amendments of Sec. 51 of the federal constitution; this is the section which defines and limits the federal powers, as compared with those of the several states constituting the Commonwealth. They were known as the (1) constitution alteration (monopolies) act, and (2) the constitution alteration (legislative powers) act; and they were so closely bound together in principle and in the popular mind, that no attempt was made to separate them in the heated campaign which preceded their defeat. The first act declared:

> When each house of Parliament in the same session has, by resolution, declared that the industry or business of producing, manufacturing or supplying any specified goods, or of supplying any specified services, is the subject of a monopoly, the Parliament shall have power to make laws for carrying on the industry or business by or under the control of the Commonwealth, and acquiring for that purpose on just terms any property used in connection with the industry or business.

This act left to Parliament the right to determine what was or was not a monopoly; it was probably the most advanced legislation in the direction of socialism ever undertaken in any country.

The second act proposed to transfer from the several states to the Commonwealth Parliament the entire control of the commerce and trade of Australia, to abolish the distinction between interstate and intrastate commerce; the right to create, dissolve, regulate and control all corporations organized for business purposes; and also the right to regulate labor and employment in any and every trade, industry and calling; and the prevention and settlement of industrial disputes on or about railways, the property of any state. All the Australian railways are owned by the several states.

The Budget.—The budget presented on Oct. 26 reported total revenue for the fiscal year 1910-11 of £18,803,000. The customs receipts were £12,980,000, £1,387,000 in excess of the previous year. From the land tax, £1,370,000 was realized. Total expenditures were £16,973,000. The surplus of £1,830,000 is to be placed in a trust fund for old-age pensions and naval construction.

Estimates for 1911-12 totaled £21,227,000. The outlay provided for defense, including a payment of £200,000 under the naval agreement to the Imperial government, and £1,515,000 for naval construction, was £4,583,000. The naval defense scheme contemplates a gradual rise in annual naval expenditure to £4,824,000 in 1932-33.

The New Capital City.—On Jan. 1, 1911, the Commonwealth of Australia celebrated its tenth anniversary by the formal approval of the site chosen for the federal capital in the district of Yass-Canberra, New South Wales, and by the passage of a bill authorizing the erection of government buildings. The territory ceded to the federal government is 900 sq. miles in extent; the capital city, 10 miles square, is to be located at the northern part, about 170 miles southwest of Sydney and 300 miles north of Melbourne. Prizes of £1,750, £750, and £500 have been offered in a design competition, open to the world, which will close Jan. 1, 1912. Designers have been asked not only to locate from the extensive data provided the necessary buildings for the federal and municipal governments, but also to plan a city of 25,000, for which immediate provision is to be made, along such lines as to take care of all probable future extensions. From the plans selected by the government, actual construction will be begun as soon as practicable.

EGYPT

The last report of Sir Eldon Gorst, published early in May and covering the year 1910, showed a general improvement of conditions. The number of crimes reported to the police decreased materially, especially those of the graver sort. The Legislative Council and General Assembly have shown encouraging interest and intelligence in dealing with public questions; they have displayed, how-

ever, a steadily increasing tendency to become mere instruments of the nationalist agitation. Sir Eldon Gorst described as a failure the experiment of combining a council representing the wealthy class of natives with a ministry chosen from the most capable natives. During the first part of 1911 the attitude of the Council showed an improvement. As to finance, the year 1910 closed with unusually favorable prospects, with the government living within its income and at the same time providing out of income for a considerable amount of capital expenditure. During 1910 there was a surplus of well over £1,000,000. The budget for 1911 estimated the surplus for last year at about half a million, which was very considerably exceeded.

The resignation of Sir Eldon Gorst early in July from the post of British Agent and Consul-General in Egypt, in which he succeeded Lord Cromer in 1907, was almost immediately followed by his death on July 12. Two days later the appointment of Lord Kitchener was announced. The appointment was approved with remarkable unanimity. In England it met the demand for a strong man in Egypt, which Sir Eldon Gorst's acknowledgment of the failure of the policy of conciliation had materially increased. It was cordially welcomed in Egypt, where even the nationalists admire Kitchener, however much they may fear his policy. Lord Kitchener arrived in Egypt late in September.

INDIA

Finance.—The financial statement presented in the Viceroy's Legislative Council on March 1 showed receipts for the preceding year of £75,454,000, £5,083,800 in excess of the estimates. The estimated expenditure was exceeded by £1,970,500. Of the revenue, £1,175,500 was an unexpected increase in railway receipts. Nearly £3,000,000 of the increase was due to opium sales, a source of revenue which is being restricted every year. The prices in 1910, however, were unprecedented. It is anticipated that when the Chinese opium traffic is obliterated by the new agreement between Great Britain and China (see *China, infra*) contributions to the revenues of the Indian government will have to be made from the Imperial Exchequer.

The Coronation Durbar.—King George and Queen Mary sailed from England Nov. 11, arriving in India, Dec. 2. This was the first visit of a British Sovereign to the Indian Empire, and the coronation Durbar festivities were celebrated on an unprecedented scale of magnificence. At the Durbar at Delhi, Dec. 12, nearly 150 ruling Princes paid homage to the sovereigns. A sensation was provided by the Viceroy's announcement tha the seat of the supreme government of India is to be transferred from Calcutta to Delhi. On Dec. 15 King George laid the first stone of the new government buildings. The news of the transfer caused a mild financial panic in Calcutta, where both government bills and real estate fell to record low figures.

SOUTH AFRICA

The First Parliament.—The first Union parliament ended a session of 98 days on April 25, the chief legislative acts of which were the post-office act, containing anti-rebate clauses; the stock-disease act; the prisons act, the mines-regulation act and the stamps act. The settlement of the question of Asiatic immigration was postponed; also any decision of the bilingual problem in the public schools. No attempt was made to reorganize the civil service, the existing condition of which creates widespread discontent. Beyond the abolition of the Cape income tax and the abolition of the Natal poll tax, little was done to equalize the burdens of taxation throughout the Union. The results of the first parliament are regarded as a distinct disappointment, traceable in large measure to the artificial adjustment of party lines. It was evident throughout the session that neither the government representatives nor the opposition forces were united upon questions of principle or of policy. This is a situation not unexpected, in view of the recent organization of the Union and the racial differences which mark the population of the states.

CONTINENTAL EUROPE

AUSTRIA-HUNGARY

The general elections, held June 13-20, resulted in the defeat of the government by the Christian Socialist party. The Premier, Baron Richard von Bienerth, resigned June 26, and Baron Gautch von Frankenthurm was invited to form a ministry. His policy differed little from that of his predecessor, and his difficulties in the Reichsrath were no less. Late in October the ministry was forced to resign. The premiership was assumed by Count Stürgkh, whose cabinet, as announced Nov. 3, included K. Heinhold d'Udynski (interior), von Roessler (commerce), von Forster (railways), von Heinlein (education), Trnka (public works), and von Zaleski Wenzel (agriculture).

Naval and Military Expenditure.—Austria-Hungary has embarked on a policy of prestige which is to involve large expenditures for armament. Hitherto the annual expenditure on the navy has been about $10,000,000. The naval programme, the estimates for which were presented Feb. 4, involves an expenditure of $26,000,000 annually until 1914, and subsequently of about $30,000,000. The personnel of the navy will number 17,000 men in 1916; in subsequent years the number will be increased to 20,000 or 21,000. Correspondingly large demands are made for the army, an increase of $20,000,000 in the annual expenditure and a special appropriation of about the same amount.

FRANCE

Ministries.—France has had a succession of ministries during the year. The cabinet formed by Aristide Briand early in November, 1910, resigned on Feb. 27, in consequence of their support in the Chamber falling to a majority of 16 votes. The matter immediately at issue was of small importance, but M. Briand interpreted the vote as a lack of confidence in his policy of conciliation.

His successor, Antoine Emmanuel Ernest Monis, was from 1899 to 1902 Minister of Justice under M. Waldeck-Rousseau. He associated with him MM. Berteaux (War), Cruppi (Foreign), Delcassé (Marine), and Caillaux (Finance). M. Monis adopted the principles of M. Briand's ministry almost entirely, and his ministry met the same fate. On May 21, a disabled aeroplane fell at Issy-les-Moulineaux, killing M. Berteaux instantly and severely injuring M. Monis. This accident precipitated the ministry's inevitable defeat, though M. Monis directed affairs from his sick bed for over a month. On June 23, the ministry was defeated in the Chamber by a majority of seven, on a division concerning the command of the Army. The fundamental causes of M. Monis' downfall, however, were his acceptance of a scheme of electoral reform involving proportionate representation, and dissatisfaction with his handling of the champagne question.

Joseph Calliaux, Minister of Finance in the Monis cabinet, on assuming the premiership, changed his portfolio to that of the interior. The only important change in the cabinet was the choice of Justin de Selves as Foreign Minister. While M. Caillaux was Finance Minister under M. Clemenceau, he devised an income-tax scheme which was accepted by the Chamber, but rejected by the Senate. The revival of this scheme was one of the most important features of M. Monis' administration. It has been vigorously advocated by M. Caillaux.

The Budget for 1912.—The Budget total amounts to $900,000,000, an increase of $35,000,000, as compared with last year. The demands of social legislation account for about $12,500,000 of this increase, and the requirements of national defence for another $7,500,000. The deficit is to be met by a duty on gas and electric light [illegible]ents, which is expected to yield $[illegible],000, by a readjustment of the hall-mark duty on precious metals, by a tax on Bourse de Commerce transactions, by increasing the penalties for fraudulent sales of house and similar property, and by calling upon the Eastern Railway

Company to repay an increased proportion of the funds advanced by the State in less prosperous years. The amount repayable by the company is not to exceed $30,000,000, and will be reduced by the amount of the final surplus in last year's revenue returns.

The Naval Programme.—The report of the Navy Committee of the Chamber of Deputies emphasized the necessity of France's regaining her lost position as the world's second greatest sea power. The programme provides that the effective strength of the French fleet in 1920 shall be 28 battleships—six of the *Patrie* type, six of the *Danton* type, launched in 1909 and 1910, and 16 improved Dreadnoughts, to be built at the rate of two a year between now and 1920; ten scout cruisers; 52 ocean-going torpedo-boats; and 94 submarines. There will in addition be a fleet of ten vessels for oversea purposes. The cost of construction involved in the new programme will amount to a minimum of $280,000,000.

The Champagne Riots.—In February the government decided to delimit the champagne district, in accordance with the demands of the wine growers of the central district around Rheims and Epernay, who protested against the inferior wines of departments like the Aube being recognized as champagne. When the government proceeded technically to separate the Aube from Marne and the Ardennes, both of which were to be included in the champagne district, the Aubois showed their resentment by riots of some violence directed against their more fortunate neighbors. The government in alarm promised to reconsider the question of delimitation, and on April 11 the Senate passed a resolution rescinding the order. This was the signal for a revolt of the Marne vintners, who hold that the trade in standard champagne is very seriously affected by the sale of the Aube product under the same name. Violent and continued rioting occurred throughout the champagne district. Gangs of peasants marched from town to town wrecking and burning the dwellings, factories, and warehouses of the opponents of delimitation. In Ay and Epernay, the chief centers of the disturbance, over eleven million bottles of wine were smashed. Order was restored only by the dispatch of sixteen regiments of infantry and cavalry to the affected district.

In June the government announced its settlement of the dispute. The system of regional delimitation instituted in 1908 is to be superseded. Henceforth wine and other regional products will rely for protection against adulteration and fraudulent imitation on the law of 1824, which will be amended to establish a special control of stocks of wines and spirits, and also to provide judicial machinery to deal expeditiously with cases of misbranding and adulteration.

The Liberté Disaster.—On Sept. 25, the first-class battleship *Liberté*, one of the 15,000-ton units of the finest squadron of the French Navy, was totally wrecked in Toulon harbor by a series of explosions in her magazines. Over 200 seamen lost their lives in the disaster. The force of the explosion damaged the sister ships of the *Liberté* anchored near by, one of which had to be docked immediately. It was rumored that the *Liberté* had been deliberately destroyed by anarchist members of the crew, but a commission of inquiry could find no evidence of such a plot. The cause of the fire which immediately preceded the explosion was attributed to defective wiring.

GERMANY

The Naval Programme.—The German naval budget for 1912 published Dec. 20, provides for the laying down of only two big ships, a battleship and an armored cruiser.

For the past four years four big ships have been built annually. The reduction of the construction programme caused the military and naval organ, the *Täglische Rundschau*, to point out that the American Navy will in Jan., 1912, usurp the place latterly held by Germany as second naval power of the world.

The *Täglische Rundschau* asserted that the United States Navy, with 31 battleships of a gross tonnage of 498,200, will rank immediately after

the British fleet of 51 battleships with a gross tonnage of 840,100. It is likely that the reduced programme is put forward in view of the elections on Jan. 12, 1912, and that supplementary estimates will be introduced in the new Reichstag to provide for the regular rate of naval expansion.

The New Patent Law.—Until last year it was required of German patentees that the patents should be "worked" within the Empire within three years of the grant, but the law was seldom enforced stringently, and it was usually considered sufficient if the patentee advertised his willingness to dispose of his rights by way of sale or license. On July 1 a new law came into operation by virtue of which it is provided that the grant of the patent can only be withdrawn if it is proved that the patented article is being manufactured wholly or chiefly outside Germany and its colonies. American owners of German patents, however, are not affected by the new law on account of the treaty between Germany and the United States, which relieves them entirely of the necessity of working their German patents.

ITALY

The New Ministry.—The extensive programme of reform proposed by Premier Luzzatti led to the downfall of the ministry in March. Failure to pacify the railway employees, who have been in a state of unrest for many years, and the rejection of a plan for the regeneration of the Senate, were contributory causes, but the main issue on which the government was overthrown was Signor Luzzatti's scheme of electoral reform, particularly the compulsory-voting feature, which was opposed by Radicals and Socialists.

On March 29, Signor Giolitti was recalled to office, after an absence of two years, and entrusted with the formation of a cabinet. The Premier took the portfolio of the interior, and associated with him the Marquis di San Giuliano (foreign affairs), Tedesco (treasury), Facta (finance), Aprile (justice), Gen. Spingardi (war), Cattolica (marine), Sacchi (public works), and Credaro (education).

The Jubilee Celebrations.—The fiftieth anniversary of Italian independence was celebrated during 1911 by two international expositions, among a host of smaller celebrations, an industrial exposition at Turin, and an exposition of art and archæology at Rome. The latter was opened by King Victor Emmanuel on March 27, the date of the official opening of the commemorative ceremonies. The failure of both the Kaiser and the Emperor of Austria to attend the official celebration led to much speculation as to the probable dissolution of the Triple Alliance. The Pope also held aloof, and at one time it was feared that he would allow himself to be influenced by Roman Catholic reactionaries to close the art galleries under his control. In connection with the expositions, many international congresses were held, but the attendance was seriously affected by the cholera scare, which interfered also with the general tourist traffic. (See XVIII, *Public Health and Hygiene.*)

The Camorrist Trial.—Since March 11, thirty-six alleged leaders of the Camorra have been on trial at Viterbo. Of the 41 originally apprehended by the Carabinieri after several years of patient work, five died in prison, were released, or escaped. The specific crime of which the prisoners are accused is the murder of a fellow Camorrist, Cuoccolo, who had too persistently opposed the leadership of Erricone Alfano. The trial is expected to result, however, in much more than the punishment of a single crime. The evidence accumulated by the Carabinieri, it is hoped, will be sufficient to ensure the speedy extinction of the whole organization in Southern Italy.

PORTUGAL

The Elections.—The first elections for the National Assembly since the proclamation of the republic were held May 28, about 63 per cent. of the registered voters going to the poll. Most of the members of the provisional cabinet were returned, and the result was a sweeping victory for the republican *régime*, the new

house containing only one avowed monarchist. At the opening meeting of the new republican constitutional chamber, June 19, a decree declaring the monarchy abolished and the royal family of Braganza banished from Portugal was unanimously approved. On the same day the republic was officially recognized by the United States.

The Constitution.—The special committee appointed to draft a constitution reported to the Assembly on July 3. The constitution submitted provided for two chambers, the members of the first elected by the people, and of the second, or upper chamber, by the municipalities. The President is to be elected by both chambers for four years, and no re-election is to be permitted. The ministers chosen by the president are to be responsible to Parliament. Both president and ministers may be brought before the High Court of the Republic, consisting of the Supreme Court of Justice and a jury of 21 chosen by election from the two houses of parliament. The president must be at least 35 years of age. His annual salary, including all allowances, is fixed at $19,500.

The Administration.—The first presidential election under the new constitution took place on Aug. 24. Manoel Arriaga, 70 years of age, a native of the Azores, by profession a journalist, was elected by a vote of 121 to 86 for his opponent, Dr. Machado, Minister of Foreign Affairs, the candidate of the Advanced Republican Group. Dr. Arriaga was put forward by the opposition Moderates in place of their former candidate, Señhor Braancamp, in the hope of checking the widening of the gap between the two parties. The compromise President was enthusiastically received, but his election failed to prevent further cleavage. By Sept. 4 open hostility had been declared between the moderates and the radicals.

The provisional cabinet, headed by Theophile Braga, held office until Sept. 3, when they were replaced by the advisers chosen by Dr. Arriaga. These were: Señhor Chagas, Premier (interior), Mello Leotte (justice), Duarte Leite (finance), Castro (war), Menezes (marine), Celestino Almeida (colonies), Vasconcellos (foreign affairs), and Paes (public works). This cabinet had a short life. At the republican congress in October it was evident that the republican party had split into several factions, groups led by Almeida and others supporting the government against Dr. Costa, the astute leader of the radical party. On Nov. 8, Dr. Almeida withdrew his support from the government, and the premier immediately resigned. The new cabinet is headed by Señhor Vasconcellos (foreign affairs), and associated with him were Falcao (interior), Paes (finance), Macieira (justice), Silveira (war), Almeida (marine), and Estevas (public works). At the opening of parliament late in November, the premier announced the chief points of the government programme to be the reform of education and legislation and the continuance of an anti-clerical policy.

Separation of Church and State.—A decree of the provisional government dated April 19, effected the separation of Church and State. The principal clauses provided for full liberty of conscience to all Portuguese citizens; equality of all churches and religious confessions, Roman Catholicism no longer being the state religion; cessation on July 1, 1911, of all state payments for the maintenance and expenses of worship, and of all impositions to meet them; contribution of members of a religious congregation to the general expenses of their worship only through the agency of some charitable body exclusively Portuguese, which must apply at least one-third of the total receipts to benevolent and charitable purposes; legality of public worship between sunrise and sunset; and control of all public worship by forbidding any minister of religion, native or foreign, to take part in any act of public worship without permission from the competent authority. In matters of detail the decree has been the subject of much debate by the constitutional government. The Chagas ministry were in favor of modification, permitting the wearing of priestly robes in the streets and withdrawing the authorization of Catholic priests to

marry, but the dissolution of the ministry came before these changes could be carried out. Señhor Vosconcellos has adopted a strong anti-clerical policy, and alteration of the decree affecting its fundamental provisions is unlikely.

RUSSIA

M. Stolypin.—Early in March the Council of Empire, in which the forces of reaction are strong, rejected a bill passed by the Duma for the establishment of the zemstvo system of local government in the western provinces. This was a measure to which Premier Stolypin attached the greatest political importance. Upon its rejection, therefore, he resigned (March 20). Three days later M. Stolypin yielded to the Czar's request that he remain in office, on condition that the zemstvo bill be enacted into law over the rejection of the Council. The emergency clauses of the constitution provide that while the Duma is not in session the Czar may pass measures by Imperial decree, subject to later Parliamentary ratification. The Czar accordingly prorogued both houses for three days and then promulgated the zemstvo bill as an "emergency" measure. At the same time he dismissed from the Council of Empire the reactionary leaders, Gen. Trepov and P. N. Durnovo, the most active opponents of the measure. This arbitrary exercise of autocratic power raised a furious storm of protest. Dr. Alexander Guchkov, the president of the Duma, resigned. The partisanship of his successor, Dr. Rodziano, was of no avail against the open attacks made upon M. Stolypin in the chamber. Urgent interpellations were supported in both houses by large majorities, calling in question the government's right to legislate by ukase when Parliament was actually in session and no emergency called for special measures. Premier Stolypin defended his action with vigor, but neither house found his reply satisfactory. The last days of the Third Duma, which was prorogued on May 27, were occupied by this unequal struggle against autocratic power.

Premier Stolypin's plans for securing the ratification of the zemstvo bill were well laid. Had he met the Fourth Duma, there is little doubt that he would have mastered it as he subdued its predecessor. On Sept. 14, however, his career was brought suddenly to an end. At a gala performance in a Kieff theatre, in the presence of the Czar, M. Stolypin was shot by a young lawyer named Bogrof. Bogrof had been connected with the secret police and had obtained permission to enter the theatre by a story of a plot against the Premier's life which he offered to frustrate. M. Stolypin died Sept. 22, and his assassin was executed three days later.

In Russia, M. Stolypin's death created a deep sensation. Autocrat though he was, the Russians recognized in him a leader with the best and most lasting interests of the country at heart. By his strong appeal to national feelings, M. Stolypin had endeared himself to great numbers of patriotic Russians. His death caused grave apprehension that the forces of reaction would again prevail in the government, but the Czar's choice of M. Kokovtsoff as M. Stolypin's successor promises well for a liberal and progressive administration under the Fourth Duma.

The comments of the foreign press uniformly attributed to M. Stolypin the preservation of Russia's constitutional institutions.

M. Kokovtsoff.—Vladimir Nikolaievich Kokovtsoff, the new Prime Minister, has been prominent in Russian public life for many years. Born in 1847, he had held several administrative posts before he was chosen Assistant Minister of Finance by Count Witte in 1896. His direction of the finances of the country has been most successful. At the beginning of 1906, M. Kokovtsoff faced a deficit of $80,000,000 caused by the Japanese war. After five years the Treasury has at its disposal a balance of $200,000,000. During the same period the budget has increased 25 per cent., and foreign trade 50 per cent. He still retains the portfolio of Finance.

By disposition M. Kokovtsoff is a Conservative; his practice has been liberal and progressive. He was not in accord with many of M. Stolypin's

policies. He was outspoken in his opinion that in 1905 Russia was not ripe for a representative legislature. Nevertheless, no Minister has had more satisfactory relations with the Duma or won more general esteem. His programme will be identical with that of M. Stolypin—the material regeneration of Russia. His internal policy will not introduce sudden or violent changes, but his methods will probably be less autocratic than those of his predecessor. In foreign politics M. Kokovtsoff is a staunch adherent of the Triple Entente, and at the same time of the policy of cultivating good relations with neighboring powers.

The Budget.—According to the Treasury Estimates, the national debt will, on Jan. 1, 1912, be reduced by 71,000,000 roubles (about $37,500,000) and will amount to 8,942,000,000 roubles. The total expenditure under these estimates during 1912 is fixed at 504,000,000 roubles. Of this sum 375,500,000 roubles will be devoted to the payment of interest on the national debt, and 27,500,000 roubles to its extinction. No new loans are contemplated. On the contrary, it is proposed to put aside a sum of 100,000,000 roubles for the redemption of the Imperial treasury bills.

Naval Policy.—The Russian navy bill of 1911 declared that the command of the Baltic must be regained, and provided for the construction of a Baltic Fleet, consisting of two squadrons, each comprising eight battleships, four armored cruisers, eight cruisers, 36 destroyers, and 12 submarines. The Black Sea Fleet, which is of secondary importance, is to be half as strong again as any possible combination of fleets in those waters. The new base in the Baltic is to be ready to receive the first squadron by 1918, and is to be doubled in size by 1924, when the second squadron will have been completed. Russia's second Dreadnought, the *Poltava*, was launched during the year.

SPAIN

The New Ministry.—In April, for the second time, the Ferrer case caused the downfall of a ministry. On behalf of the heads of the army, complaint was made to the President of the Chamber of Deputies that the judges who presided at the trial of Ferrer had been inadequately defended by the Prime Minister during the Ferrer debate. A Cabinet council was held immediately and when it was found that the Minister of War agreed with the complaint, the government resigned. King Alphonso immediately invited Premier Canalejas to reconstruct his Cabinet, and in a few hours a new ministry was formed, which includes only four of the members of the old government. These are, besides the Premier himself, Garcia Prieto (foreign affairs), Señor Gaiset (public works), and Ruiz Valarino (home office). Of the new members, Gen. Lugue (war) is considered the most democratic general officer in the army; Señor Barroso (grace and justice) has sat in previous Liberal Cabinets.

Labor Troubles.—During the early part of September, labor troubles developed with extraordinary rapidity, and by the middle of the month a condition bordering on anarchy prevailed. Strikes and riots occurred all over the country, particularly in the Province of Valencia, and in Barcelona a revolutionary plot was exposed. On the 19th martial law was proclaimed throughout Spain.

Exclusion of Religious Orders.—An important step toward the settlement of the outstanding differences between Spain and the Vatican was taken on Dec. 23, 1910, when the so-called "padlock bill," already passed by the Senate, was enacted by the lower house of the Cortes. This bill, which prohibited the establishment of any new religious congregations in Spain for a period of two years, was the first important item on Premier Canalejas' programme of reform. The loss of Spain's American colonies and the closing of religious houses in France and Portugal have added enormously to the number of congregations in Spain. While the "padlock bill" cannot exclude the refugees already in the country, it will avoid the complication introduced by the establishment of new congregations until a definite understanding has been reached with the Vatican authorities.

SWEDEN

The Elections.—The general elections to the lower house of the Riksdag, conducted under the new manhood suffrage law, resulted in the overthrow of the Conservative government under Arvid Lindman, and the establishment of a Liberal ministry. The constitution of the old house (with a total membership of 223) was 98 Liberals, 90 Conservatives and 35 Socialists. The new house (membership 230) contains 101 Liberals, 65 Conservatives and 64 Socialists, this result being brought about by coöperation between the two radical parties against the common enemy. The new ministry is headed by the Liberal leader, Karl Staaf, who was at the head of the government when the union between Sweden and Norway was dissolved in 1905. The Socialists declined to form a coalition government, but they are expected to support the ministry in carrying out the reforms to which it is pledged. The most important of these promise a larger measure of democratic government, and the whole programme is not only progressive but largely socialistic. The belief is quite widely held that the establishment of a republic in Sweden, along extremely socialistic lines, will not be long delayed.

The Budget for 1912.—The Swedish revenue for the financial year 1911-12 is estimated at 213,186,600 kronor (about $59,000,000), of which a little over half is derived from import duties, a little less than a quarter from customs duties, and the remainder from business undertakings such as railways, telegraphs, post, telephones, the Bank of Sweden, water power, etc. The expenditure is estimated at 195,781,300 kronor; a sum of 5,820,000 kronor is assigned to the sinking fund, and 2,525,000 kronor for increasing the workingmen's insurance fund. The balance, together with the sum of 44,077,400 kronor which is to be borrowed, is to be used for developing the business undertakings of the State. Among these business undertakings is the putting into use for industrial purposes of the enormous supply of water power in Sweden.

TURKEY

The Young Turks.—It is the general belief that the precipitate action of Italy in taking forcible possession of Tripoli on 24 hours' notice was due to a sudden realization of the rapid advance of Turkey in strength and resources, and the danger of delay in demonstrating Italy's "mission" in northern Africa. A consideration of the achievements of the Young Turks discloses ample grounds for Italy's apprehension. In the two years ended April 27, 1911, the Young Turks completely liberated Macedonia from European control, reorganized finance, established an equitable system of taxation, projected public works of considerable magnitude, developed commerce and transportation, successfully floated a loan of $55,000,000, reorganized the army, embarked on a comprehensive scheme of naval development, and introduced many improvements in local government, justice and education. During 1911 the progress of development and reform was interrupted by serious internal troubles, the risings in Yemen and Albania, and by the Italian war.

The Albanian Revolt.—The revolt in Yemen in January was followed in March by a much more serious rebellion in Albania. During April and May the situation grew steadily worse. On June 12 it was announced that in official quarters the Turkish campaign in Albania was considered to be at an end, the insurgents being driven across the Montenegrin frontier or massed on Turkish territory. With the restoration of comparative quiet, the methods by which the revolt was quelled were revealed. The aim of the Turkish force had apparently been extermination, rather than subjugation. Acting on instructions from Constantinople, it was alleged, houses and villages were destroyed, and the men, women and children of the rebel tribes massacred with the thoroughness of a premeditated policy. When an "armistice" was declared after the insurgents had been penned in a small area between the Sem River and the Montenegrin frontier, the alternative offered by the Turkish commander, Torgut Shevket, was the acceptance

of a very general offer of good treatment to those who surrendered, or death by starvation within the area surrounded by the troops. The tone of foreign comment on the policy of the Young Turks was one of extreme disappointment, and the loss of prestige soon influenced the Turkish government to moderate its methods of dealing with the insurgents. Torgut Shevket was superseded, and the promises of reform were made more specific. Finally, early in August, the government decided to grant virtually all the demands put forward by the insurgents, including a general amnesty, limitation of military service, reduction of taxation, the right to carry arms, establishment of national schools, construction of roads, and support of the refugees from Montenegro until the next harvest. On the advice of the King of Montenegro, the terms were accepted, although the Albanians were unwilling to trust the Turks, and by the end of the month refugees were returning from Montenegro.

The Turco-Italian War.—The events of the war in Trpoli are summarized elsewhere (see *Tripoli, infra*, and V, *International Relations*). It is here necessary to record only that Italy's declaration of war was followed immediately by the resignation of Hakki Pasha and his cabinet. Said Pasha was appointed Grand Vizier on Sept. 29, and Rechid Pasha Minister for Foreign Affairs. The other members of the new cabinet include Mahmud Shevket Pasha (war), Nail Bey (finance), Khurshid Pasha (marine), and Djelal Bey (interior).

AFRICA

MOROCCO

The internal history of Morocco during 1911 is interesting only because of the international complications which arose out of the Moroccan question. These are discussed on another page of the YEAR BOOK (see V, *International Relations*). The events leading up to the tension between France and Germany may be very briefly summarized. Ever since the Spanish campaign of 1909, the prestige of the Sultan, Mulai Hafid, has been steadily waning. One after another the great tribes of the interior have risen in revolt. By April Fez was in a state of siege, wth the Sultan's army cut off from communication with the capital. After unsuccessful negotiations with certain Berber tribes, Mulai Hafid applied to France for aid. Under the terms of the Algeciras agreement of 1906 France and Spain are charged with the duty of preserving order in Morocco. The support of the Sultan being in line with her Moroccan policy, France on April 27 notified the signatories to the Algeciras convention that intervention was necessary to protect the Europeans in Fez. On the same day a relief force was dispatched from Casablanca. On account of the difficulty of provisioning the troops, the army made slow progress and it was May 23 before the column reached Fez. The work of pacification was at once begun, and in a number of expeditions the rebellious tribes were induced to renew their allegiance to Mulai Hafid. The French troops were withdrawn from Fez in June, leaving the country in comparative quiet.

The action of Spain late in May in landing a large body of troops at Larache and marching them inland aroused some apprehension. It was explained that they were engaged merely in military exercises. It was not until July 1 that the Moroccan question assumed a serious international aspect. On that date German troops were landed at Agadir from the gunboat *Panther*. Three days later the cruiser Berlin was ordered to their support. Thereafter the diplomatic negotiations between France and Germany became of the most absorbing interest to the whole world.

TRIPOLI

Late in September the center of interest in African affairs suddenly shifted from Morocco to Tripoli. On

Sept. 27 the Italian *chargé d'affaires* at Constantinople was instructed to present to the Porte a statement of the unjust discrimination against Italian citizens and commerce in Tripoli, accompanied by an ultimatum to the effect that Italy had determined upon the military occupation of Tripoli and Cyrene unless a satisfactory reply was received in 24 hours. Next day a fleet of seven Italian warships arrived off the city of Tripoli, while Turkey was still considering the ultimatum. Turkey's reply, transmitted Sept. 29, denied discrimination against Italian citizens in Tripoli, and expressed willingness to arbitrate the difficulty. To Italy, however, this reply was not satisfactory, and on the afternoon of Sept. 29, war was declared. The Italian admiral off Tripoli immediately demanded the surrender of the town and forts, while another Italian squadron proceeded to clear the lower Adriatic of Turkish vessels. A fleet of Turkish torpedo boats were blockaded in the harbor of Preveza; the Turkish battleship fleet, which was at Beirut, escaped to the Dardanelles, pursued by the Italian fleet. Tripoli was bombarded on Oct. 3 and 4, and on Oct. 5 the Italian flag was raised on one of the forts. Practically no resistance was made by the Turks, the garrison of about 5,000 having withdrawn to the desert before the bombardment began. On Oct. 11 the naval force occupying Tripoli was reinforced by the van of the Italian expeditionary army. The previous day another detachment had taken possession of Mersa Tobruk. On the 12th a total force of 25,000, under Gen. Caneva, was landed at Tripoli, and smaller detachments at Benghazi, Derna, and several other coast towns. The fleet cruised along the coast coöperating with the land forces, and the fortified towns were reduced in turn. Derna was bombarded Oct. 16, and Benghazi on Oct. 19. At Benghazi the landing force met with stubborn resistance. At all the points occupied the Italians entrenched themselves against the attacks of the Turks and Arabs, the frequency and severity of which gradually revealed to the invaders the difficulties in the way of a complete conquest of Tripoli. Two attacks at Tripoli on Oct. 23 and 26 were repulsed by the Italians with heavy losses. In the former, the Arabs of the oasis, who had previously surrendered, treacherously assisted the Turks by a rear attack. The reprisals taken by the Italians, under the plea of military exigencies, were reported to have included women and children in a general massacre. It is now clear that while some women and children perished in the confusion, the Italian retribution was not entirely indiscriminate. Of its ruthless severity, however, there can be no question. Arabs bearing arms were shot on sight; hundreds were shot after a pretence of a trial; over 2,000 were transported to the Italian islands. At the end of three days, the Arabs had been completely expelled from the oasis, and every structure in the oasis which could lend concealment to a rebel was razed. The news of the slaughter of Arabs gave rise to severe criticism of the Italians throughout the civilized world. Early in November, however, it was disclosed that the atrocities associated with the Arab treachery were an overwhelming provocation.

During November fighting continued without cessation. Engagements at different points of the Italian lines were of daily occurrence, the casualties on both sides reaching large totals. On Dec. 5 the Italians won a general engagement which gave them complete possession of the oasis outside Tripoli; this victory was considered decisive for the possession of the country. The Turkish troops in the interior were poorly supplied with ammunition, and Lord Kitchener's effective measures against the export of ammunition from Egypt closed the only possible source of supply. The European powers, therefore, began to urge upon the Porte the hopelessness of further resistance. Italy insisted upon the annexation of Tripoli, but offered to pay an indemnity. This Turkey was urged to accept, and at the close of the year the outlook was favorable for an early peace, although Italy's task in subjugating Tripoli is likely to be long and difficult.

ASIA

CHINA

Constitutional Government.—The Chinese National Assembly, which began its sessions Oct. 3, 1910, was dissolved on Jan. 11, after a career marked by frequent clashes with the throne and the Grand Council. Its work, however, was surprisingly good. Its members displayed almost all the qualities which make parliamentary government a success, and in recognition of its efficiency, the Regent advanced the date of summoning a general parliament to the summer of 1913. Later in January the Regent promised a responsible Cabinet during 1911, and the conversion of the Grand Council into an advisory council. On May 8 an Imperial edict abolished the Grand Council and substituted for it a constitutional Cabinet of 13 members, headed by Prince Ching. Premier and Minister of Foreign Affairs. Two assistant Premiers were provided for and the remaining members were the heads of the ten government departments.

Foreign Loans.—Two loans, participated in by an American syndicate, the Hong-Kong and Shanghai Bank, the Deutsch-Asiatische Bank, and the Banque de l'Indo-Chine, were negotiated early in the year. The first, signed April 15, provided $50,000,000 for the reform and unification of the currency system and the development of various enterprises in the three Manchurian provinces. On May 20, the second loan agreement was signed, providing $30,000,000 for the construction of new railways. The contract covered the construction of 1,200 miles of line in the wealthy provinces of the Yangtsze Valley. The principal provisions were: (1) the redemption of the unredeemed gold bonds, amounting to about £500,000, issued by original American concessionnaires of the Canton-Hankau Railway; (2) the construction, under a British chief engineer, of a main line of 600 miles from Wuchang, the capital of Hupeh Province, through Chansha, the capital of Hunan Province, to the southern border of Hunan, where it will connect with the Kwangtung Railway now being constructed by the Chinese; (3) the construction, under a German chief engineer, of a main line of 400 miles in Hupeh Province from Ichang on the Yangtsze through Chingmenchau and Siangyang to Kuangshui, on the Peking-Hankau Railway; (4) the construction, under an American chief engineer, of a main line of 200 miles in Hupeh Province from Ichang to the border of Szechuan Province.

The Revolution.—The general revolutionary movement of the last months of 1911 was presaged by the riots which occurred in Canton in the last days of April and produced such sympathetic responses in other cities as to indicate a wide revolutionary organization. The famine in the south and the plague in the north inspired this revolt, which, by the middle of May, had reached quite serious proportions. The cradle of the revolution, however, was not Canton, but Chengtu. The attitude of the people of Szechuan province toward the government's railway policy, particularly the provisions of the railway loan agreement which turned over to Americans a line already begun by a provincial company with headquarters at Chengtu, was causing the government a good deal of concern as early as the first of September. The inhabitants of Chengtu employed principally passive resistance, but in other parts of the province rioting was frequent. From Chengtu the agitation spread to Wuchang, and it was the mutiny of the troops in this city on Oct. 10, accompanying a popular revolutionary outbreak, that introduced the general movement of revolt. By this time the revolution had lost its local significance and was directed against the Manchu dynasty. Oct 12, the cities Hankau and Hanyang were occupied by the rebels, the government arsenal and mint at Hanyang yielding large quantities of arms and money. With the three principal cities of Hunan and Hupeh provinces in the hands of the revolutionists,

Yuan Shih-kai was recalled from his retirement on Oct. 14, and appointed Viceroy of Hunan and Hupeh, a post which he accepted on Oct. 18 after insisting on a number of conditions. In the meantime Kiukiang had become a rebel stronghold (Oct. 17), and the rebels were successfully repulsing the attempts of the Imperial troops to recapture Hankau. From this date the fall of minor cities in the Yangtsze Valley was reported almost daily.

On Oct. 22 the second session of the National Assembly was opened at Peking. One of its first acts was to impeach Sheng-Hsuan-Huai, Minister of Posts and Communications, who had been largely instrumental in negotiating the railway loan. His dismissal on Oct. 26, was the first intimation of the throne's surrender. The National Assembly on Oct. 24 demanded the granting of a number of reforms, including the immediate establishment of a parliament, and the proclamation of amnesty to the rebels surrendering in view of these reforms. By an edict of Oct. 30, the baby Emperor Pu Yi acknowledged the defects of his government and promised the reforms demanded. On the same day Yuan Shih-kai, who had been given supreme command of the army and navy on Oct. 28, was offered the premiership of China.

These concessions, however, were not enough for the revolutionists, whom continued success encouraged to seek far greater changes than those first demanded. Late in October a republic was proclaimed, with Gen. Li Yuan Heng, commander-in-chief of the revolutionists, "President of the Republic of China." The National Assembly thereupon redoubled its efforts to obtain conciliatory reforms. On Nov. 3 the Emperor accepted the draft of a new constitution, limiting the power of the throne and giving Parliament control of the budget. The same day the rebels occupied Shanghai, and two days later Suchow. The fall of Fuchau and Canton immediately following placed the whole of Central China, with the exception of Nanking and Hankau, which had been retaken by the Imperial troops Nov. 1, under rebel control. On Nov. 6 the revolutionists formed a cabinet at Shanghai in which Wu Ting Fang, former minister to the United States, accepted the portfolio of foreign affairs.

Yuan Shih-kai's acceptance of the premiership was still in doubt. Nov. 8 he was formally appointed by the National Assembly, and on the 13th he arrived in Peking. Three days later his cabinet was appointed. It contained several avowed sympathizers with the revolution, and the announcement gave little encouragement to hope for the restoration of peace. Meanwhile the rebel successes had continued, several more provinces joining the revolution. Hankau had been almost totally destroyed by fire early in the month, and Nanking, the last Imperial stronghold in central China, was in a state of siege. Here occurred (Nov. 10) the first massacre of the revolution, the Manchu troops in blind fear and rage butchering men, women and children suspected of revolutionary sympathies. The capture of Nanking on Nov. 29 was the climax of the revolution. The day before Wuchang had been evacuated by the revolutionists; the day following a three-day truce requested by Li Yuan Lung, the rebel leader at Hankau, was granted by Yuan Shih-kai. On Dec. 4 the armistice was extended for 15 days.

An important obstacle to compromise was removed Dec. 6, when Prince Chun, the Regent, resigned, accepting all the blame for the revolutionary upheaval. The edict in which the Empress-Dowager accepted his resignation affirmed that hereafter all responsibility for political affairs is entrusted to the Premier and cabinet. The guardianship of the Emperor was vested jointly in Shih Hsu, a Manchu, and Hsu Shih Chang, a Chinese. With the elimination of the Manchu princes from supreme authority, the feeling of the revolutionists against the throne seemed to moderate, and they displayed a disposition to compromise. Informal negotiations were begun, on the Imperial side by Tang Shao-Yi, Minister of Communications in the new Cabinet, whose revolutionary sympathies were pronounced, with Gen. Li Yuen Heng, at Hankau. On Dec. 18 the peace conferences were transferred

to Shanghai, Tang Shao-Yi representing the Premier and Wu Ting Fang the revolutionists. The first act of the conferees was to make the armistice effective and to provide for its extension to Dec. 30. On Dec. 20 the representatives of the United States, Great Britain, Japan, Germany, France and Russia presented an identical note to Wu Ting Fang and Tang Shao-Yi expressing the good will of their governments and the hope that the peace conference would bring the revolution to a close. Neither delegate came to the conference with any definite plan of compromise. Wu Ting Fang pressed the demands of the revolutionists for the establishment of a republic, and won expressions of sympathy from Tang Shao-Yi. The conference was interrupted at this point while Tang Shao-Yi communicated with Peking. On Dec. 21, Yuan Shi-kai declared without qualification that he declined to accept a republic. His uncompromising attitude was no doubt inspired by the expectation that foreign assistance, both physical and financial, would be available for the support of the monarchical form of government. Very soon, however, it became apparent that while the powers had taken very complete precautions for the protection of the lives and property of their citizens, their active aid could not be counted on to preserve the Manchu dynasty. Yuan Shih-kai then secured the consent of the Manchu princes to refer the decision as to China's future form of government to a national convention, and this proposal, offered by Tang Shao-Yi on Dec. 26 was accepted without hesitation by Wu Ting Fang. The armistice was extended on Dec. 29 pending the decision of the convention, the terms of the agreement involving the evacuation by the Imperial troops of all their strongest positions. It was considered at the end of the year that the calling of the convention was merely a formality, designed by Yuan Shih-kai, in despair of preserving the monarchy, to obtain assurances as to the future treatment of the Imperial clan and the Manchu people, and to avoid an outbreak in Peking when the final announcement of the establishment of the inevitable republic is made. The edict calling the convention was issued Dec. 28, and it was expected that announcement of the abdication of the Empress Dowager and the Emperor would be delayed only a few days. The following day the secession of Mongolia and the proclamation of the Kutuktu as Khan foreshadowed the dissolution of the Empire.

Sun Yat Sen, whose efforts to obtain financial support for the revolutionists brought him into prominence in both Europe and America during the early summer, arrived at Shanghai Dec. 25. Though he has taken no active part in the hostilities, his long and patient efforts to unite the Chinese against the Manchu dynasty have made him one of the most interesting figures of the revolution. On Dec. 29 the provisional republican convention assembled at Nanking elected him president of the republic, but this action of an unofficial body was expected to have no little influence on the final settlement of the revolution.

The New Opium Agreement.—On May 8 a new opium agreement between England and China was signed at Peking, which apparently insures the extinction of the opium traffic in at most seven years. It is a continuation of the agreement signed in 1907, which expired in 1910. By the new agreement England agrees that no opium shall be conveyed from India to any province in China which has effectively suppressed the cultivation of the poppy, and that the entire export shall cease in less than seven years if proof is given that in the meanwhile the production has ceased in China. The ports of Canton and Shanghai are to be the last closed to imports. Other provisions relate to administrative details, including official inspection in each country. Great Britain consents also to an increase of duty to 350 taels a chest on imports, provided that an equivalent excise tax be placed on domestic opium in China.

JAPAN

Finance.—In the financial year 1910-11, Japan's tax system was readjusted with a view to the recupera-

tion of the economic powers of the nation and, at the same time, to remove any inequality in the incidence of taxes. An adjustment of the various administrative departments was carried out by which the conduct of official business was simplified and expedited. Staffs of government officials were reduced, while salaries were increased about 25 per cent. The government also formed the plan of converting its 5 per cent. loans into 4 per cent. bonds and increased the provision for the redemption of war loans.

For the year 1910-11 the ordinary revenue was estimated at £49,861,096, and the extraordinary revenue at £4,866,331, a total of £54,727,427. The ordinary expenditure was estimated at £42,782,226, and the extraordinary expenditure at £11,945,200, making a total of £54,727,426.

The New Ministry.—Notwithstanding his administrative and financial reforms, Count Katsura was not able to check the steady increase of taxes. His failure to keep his promises that taxes should not be increased led to the resignation of the Katsura ministry on Aug. 25. Early in September a new cabinet was formed by Marquis Saionji. Pending the return to Japan of Viscount Uchida, whose term at Washington expired in September, the portfolio of foreign affairs was temporarily assumed by Count Hayashi, who is now Minister of Communications. Dr. Yamamoto, ex-Governor of the Bank of Japan, became Minister of Finance. The other members of the cabinet are Gen. Ishimoto (war), Baron Saito (navy), Hara (home affairs), Makino (agriculture and commerce), Matsuda (justice), and Haseba (education).

PERSIA

The persistent demands of Great Britain and Russia for more efficient policing of the country imposed upon Persia early in the year the problem of reorganizing its finances in order to provide for an adequate military and police force. By vote of the Mejliss, the United States government was asked to choose five American experts to supervise, for a minimum period of three years, the financial affairs of Persia. The appointees were W. Morgan Shuster, treasurer-general; Frank E. Cairns, director of taxation; C. L. McCaskey, inspector of provincial revenues; R. W. Halls, in charge of all auditing and accounting; and Bruce G. Dickey, inspector of taxation. In June Mr. Shuster's commission was defined by the Mejliss as "absolute control over every department of finance, including the collection and distribution of all revenues in the custody of the Treasury." Mr. Shuster brought to his task both ability and energy, but it was not long before his administration of the finances led Persia into a dispute with Russia. (See V, *International Relations*). Russia alleged that the treatment of Russian consular officials by Mr. Shuster in the matter of confiscating the property of Shuaes-Sultaneh, the rebel brother of the ex-Shah, constituted an insult to Russia, for which Mr. Shuster's dismissal was demanded in an ultimatum transmitted to the Persian government on Nov. 29. Popular feeling in Persia favored resistance to Russia's demands, and during the early weeks of December, the Mejliss refused to consider the Cabinet's recommendation of surrender. Russia, meanwhile, concentrated a considerable body of troops at Kasbin, within striking distance of Teheran, and on Dec. 21, a second ultimatum threatened an immediate advance on the capital at the end of 24 hours if Russia's demands were not complied with. The Mejliss then authorized the Cabinet to deal with the ultimatum, and the following day the tension was relieved by the acceptance by Persia of the terms offered by Russia.

The Persians had no sooner conceded all the Russian demands than Russia instituted reprisals for attacks on Russian officials by Persian nationalists during the progress of the dispute. Punitive forces were sent to Tabriz, Resht and Enzeli. At the close of the year, Persia was in a state of anarchy, with no immediate prospect of relief. The National Council had been dissolved Dec. 24, and even Teheran was under martial law.

VII. LAW AND JURISPRUDENCE

FRANCIS M. BURDICK

INTERNATIONAL PRIVATE LAW

International Bills of Exchange.—One of the most interesting projects of international codification is that relating to bills of exchange and checks, in which considerable progress was made by the conference held at The Hague in June and July, 1910. The proceedings are fully detailed by the delegate from the United States, Hon. Charles A. Conant, in his report of Jan. 3, 1911, which is published as Senate Document, No. 768, of the Third Session of the Sixty-first Congress.

The initiative in holding this conference came from Germany and Italy, and the draft uniform code discussed by the conference followed closely a draft proposed by the German delegates. Thirty-nine countries were represented in the conference. At its opening, the delegates from Great Britain and the United States gave notice of their inability to commit their governments to an adoption of the proposed code. This attitude, they explained, was due not to any want of sympathy with the objects of the conference, but to the facts, (1) that the English and American law of commercial paper had developed along quite different lines from those followed by the law of most continental states; and (2) that this branch of law had been recently codified in Great Britain and many of her colonies, as well as in most of the United States. Still another obstacle to the acceptance of a uniform international code of negotiable paper by this country was described by our delegate in these words: "The Federal Government has no authority to legislate regarding bills of exchange, whether foreign or domestic." However, the English-speaking delegates were urged to attend the conference and take part in its discussions, with a view of enabling the continental conferees to bring their code as nearly as possible into harmony with the English codes. They acceded to the request, and have the satisfaction of knowing that the draft, tentatively agreed upon, approaches the English law more nearly than any existing continental code.

The conference adjourned to meet at The Hague in Sept., 1911, but a further adjournment has been taken to the spring of 1912, when the proposed draft is expected to receive its final form. At the same meeting a proposed code of checks will be considered. The questionnaire upon this topic has been under consideration during the present year, and Mr. Conant will report the views of American bankers and lawyers concerning it.

Undoubtedly it is too much to hope that the Conference will so far modify the proposed codes as to make them conform to the principles of English commercial law. If it succeeds, however, in harmonizing in all continental states the rules applicable to negotiable paper, it will have rendered a great service to the mercantile world; for international trade will then need to concern itself with but two systems of law on this topic.

Legislative Tendencies in Europe.—No attempt will be made to describe these fully, but some of the more important are as follows*:

The Belgian Parliament has

* This information comes mainly from the Annual Bulletin of the Comparative Law Bureau of The American Bar Association, of July 1, 1911.

enacted a substantially new code for the judicial settlement of labor disputes, with a view of harmonizing the relations between employer and employee.

The legislative enactments of France vie with those of our states, in number and character. Laws relating to labor show a legislative disposition to supervise and regulate many lines of business for the greater protection of the laborer; while health legislation is scrutinizing enough to "prohibit the sale, exhibition and importation of nursing bottles with long tubes."

In Great Britain, on the other hand, the constitutional and political struggle between the leading parties, has reduced the statutes affecting private law to a minimum.

Holland, after an experiment of more than 40 years in dispensing with a patent law, has adopted one. It does not secure to inventors all the privileges to which they are entitled under our statute, nor can an infringement be prevented by injunction. The right to loan money on personal property has been subjected to very careful statutory regulation in Holland.

In Switzerland the separation of Church and State has made progress. For example, Canton Basel-Stadt has secured the federal guaranty of a constitutional amendment providing for the gradual abolition of state control of church officers and property and the relegation of these to their respective religious communions. Some of the more important changes in Genevan polity are those which secure to women the right of suffrage, and make them eligible to the workmen's arbitration boards; and which provide for the establishment of juvenile courts.

Judicial Decisions.—Foreign marriages and corporations have furnished the Belgian courts with difficult problems for solution. (Annual Bulletin *supra*, note i, pp. 88-90.) A cigarette manufacturer is held by the Court of Appeal of Liège to be without redress against a retail dealer who sells the former's cigarettes at a price below that fixed by him, where the retailer buys, not from the manufacturer, but from a third party, on the ground that there is no privity of contract between the plaintiff and defendant. The court intimated, however, that if the defendant knew of the plaintiff's contract with the third party and conspired with him to avoid it, he would be guilty of a *quasi-delict*. (Ibid. p. 90.)

The Workman's Compensation Act of 1906 in Great Britain is responsible for a radical change in the character of judicial opinions in controversies between master and servant. These opinions rarely contain discussions of legal principles, but are confined mainly to such questions as these: Was the injury for which suit is brought an "accident" within the meaning of that term in the statute? Did it arise out of "the plaintiff's employment"? Examples are afforded by the following cases: A collector and canvasser to an industrial company, while riding a bicycle in the course of his employment, was knocked down and killed by a tram-car. The bicycle was not provided by his employer, nor was he directed by the latter to use one; but the fact that he did use one in his work was known to, and not forbidden by, the company. It was held that his death was due to an accident which arose out of his employment and in the course of it. (Pierce v. Provident Clothing & Supply Co., Limited [1911], 1 K. B. 997; 89 L. J. K. B. 831.) On the other hand, the same court ruled that a journeyman baker who suffered an injury in his hand and arm from frost-bite, while on his rounds in his employer's cart, distributing bread and obtaining payment, was not the victim of an accident arising "out of his employment," though it did happen in the course of the employment. (Warner v. Couchman [1911], 1 K. B. 351; 80 L. J. K. B. 526.) Again, the House of Lords decided that the following case was that of an accident which happened in the course of employment, but did not arise out of it. A sailor, having been on shore with leave, while returning to the quay, fell into the water and was drowned. The access to the ship from the quay was by a gangway which was properly lighted. Lord

Chancellor Loreburn said: "The accident arose from a risk common to everyone, namely, that of falling from the quay into the water, and was not especially connected with his work and employment." He added: "It is another of the very numerous cases in which the question is whether an accident arose 'out of and in the course of' the workman's employment, words which admit of inexhaustible varieties of application according to the nature of the employment and the character of the facts proved. The facts in different cases are infinitely different; and if we were upon each argument to discuss them and to differentiate one from another, judgments in courts of law would be interminable and would lead rather to confusion than to enlightenment." (Kitchenham v. Owners of S. S. Johannesburg [1911], A. C. 417.)

FEDERAL AND STATE CONSTITUTIONAL LAW

AMENDMENTS TO FEDERAL CONSTITUTION

Income Tax.—Art. XVI providing for an income tax has been ratified during the year by the following states: California, Colorado, Idaho, Indiana, Iowa, Kansas, Maine, Missouri, Montana, Nebraska, Nevada, New York, North Carolina, Ohio, North Dakota, Oregon and Washington.

Direct Election of Senators.—The proposed amendment for the direct election of United States senators has been requested by the following states: Colorado, Iowa, Kansas, Minnesota, Montana, Nevada, Ohio, Oregon, Texas and West Virginia. In some of these states the request has taken the form of instructions to their senators and representatives in Congress to promote the submission of such amendment to the states. In others, it has taken the form of a request for a national convention at which the amendment is to be presented. (See VIII, *Popular Government and Current Politics.*)

Monopolies.—Illinois asked Congress to call a constitutional convention to propose an amendment giving Congress full power to prevent and suppress monopolies throughout the United States by appropriate legislation.

Polygamy.—In Montana, Nebraska, Ohio and Texas the legislatures requested Congress to call a constitutional convention to add an amendment to the federal constitution prohibiting polygamy. Similar resolutions have been passed in previous years by the following states: California, Delaware, Iowa, Maine, Minnesota, Missouri, New Jersey, New York, North Carolina, North Dakota, Pennsylvania and Washington.

AMENDMENTS TO STATE CONSTITUTIONS

California leads the states in the number and variety of its constitutional amendments. More than a hundred amendments were proposed in the legislature and 23 were submitted to the people at the special election Oct. 10, 1911, all of which were adopted by popular vote. They are as follows:

Amending Sec. 14, Art. I, so as to permit private property to be taken by a railroad run by steam or electric power for logging or lumber purposes as for a public use, and declaring such taker a common carrier.

Amending Sec. 1, Art. I, granting the suffrage to both sexes, but excluding native Chinese, idiots, insane persons and those convicted of infamous crimes or of embezzlement or misappropriation of public money, and those unable to read the constitution in the English language and write his or her name. (See VIII, *Popular Government and Current Politics.*)

Amending Sec. 1, Art. IV, so as to reserve to the people the powers of initiative and referendum; also securing the same rights to the electors of the various counties, cities and towns in regard to local matters. (See VIII, *Popular Government and Current Politics.*)

Adding Sec. 4½ to Art. VI, providing no judgment shall be reversed or new trial granted in a criminal case for errors in practice, pleading or evidence unless the court is of the opinion that the error complained of resulted in the miscarriage of justice.

Amending Sec. 14, Art. XI, to authorize the legislature to provide for the inspection of merchandise, manufactured articles and commodities.

Adding Art. XXIII, providing for the recall by the electors of all public officials. (See VIII, *Popular Government and Current Politics.*)

Amending Sec. 13, Art. XX, providing that the plurality of votes given at an election shall constitute a choice where not otherwise directed in this constitution.

Amending Sec. 20 and 21 of Art. XII, prohibiting the increase of railroad rates except with approval of the railroad commissioners, such decision not to be reviewable by any court except on the question of such rates resulting in confiscation of property; also prohibiting discrimination in transportation charges.

Amending Sec. 22, Art. XII, altering the constitution of the railroad commission and its powers.

Amending Sec. 1, 5, 11 and 15, Art. VI, relative to the judiciary, abolishing the office of justice of the peace and giving the legislature power to establish inferior courts instead.

Amending Sec. 14 and 21, Art. VI, making the clerk of the Supreme Court appointive by the court.

Adding Sec. 1¼ to Art. XIII, exempting property to the amount of $1,000 to every resident of the state who has served in the army, navy, marine corps or revenue marine service of the United States in time of war and has received an honorable discharge.

Amending Sec. 23, Art. XII, conferring power and jurisdiction upon the railroad commission to regulate and control public service associations.

Amending Sec. 8½, Art. XI, relating to powers conferred on municipal corporations by freeholders' charters.

Amending Sec. 2, Art. IV, limiting the biennial session of the legislature to 30 days, when recess for not less than 30 days shall be taken. On reassembling no bill shall be introduced in either house without the consent of three-fourths of the members thereof, and no member shall introduce more than two bills.

Amending Sec. 16, Art. XX, as to the term of public officers.

Adding Sec. 7½ to Art. XI, relative to charters of counties and amendments thereof, giving power to counties to frame charters by boards of freeholders.

Amending Sec. 8, Art. XI, relating to such charters and their amendment.

Adding Sec. 21 to Art. XX, authorizing the legislature to create and enforce liability of all employers to compensate their employees for any injury in the course of employment irrespective of the fault of either party.

Amending Sec. 19, Art. XI, authorizing municipal corporations to establish and operate public utilities.

Amending Sec. 7, Art. IX, providing four years as a maximum time for the use of text books without change or alteration.

Amending Sec. 19, Art. XII, prohibiting passes by transportation companies to any officer in the state except to members of the railroad commission and their employees and to peace officers.

Amending Sec. 18, Art. IV, relating to the impeachment of state officers and judges, extending impeachment to members of the District Court of Appeals.

Colorado.—The following amendments are to be submitted to the voters at a regular election:

Amending Sec. 6, Art. XI, regulating the indebtedness of counties by loan.

Amending Sec. 16, Art. XV, declaring the business of smelting, sampling, refining, reducing, milling or otherwise treating ores, minerals or metals to be one affected with a public interest and devoted to a public use.

Amending Sec. 15, Art. 1, creating and regulating a state tax commission and county boards of equalization.

Amending Sec. 3, Art. XI, authorizing the issue of bonds not exceeding $10,000,000 for the construction and improvement of public highways in the state.

Delaware.—The following amendments were proposed in accordance with the existing constitution:

Amending Sec. 10, Art. II, relating to the journal to be kept by each house of the legislature.

Amending Sec. 19, Art. II, authorizing the legislature to lay out and maintain certain highways.

Amending Sec. 5, Art. IV, relating to a quorum in certain courts, and apportioning business among them.

Florida.—To be submitted in 1912:

Amending Sec. 42, Art. V, providing for an additional Circuit Judge.

Amending Art. XII, providing for the issue of bonds by special school districts for the use of public free schools.

Georgia.—To be voted on:

Amending Sec. 1, Art. VIII, providing a uniform system of common schools, but separate schools for the white and colored races.

Amending Sec. 3, Art. VII, relating to the authority to borrow money for the state.

Amending Sec. 2, Art. VII, relating to tax returns.

Idaho.—To be voted on:

Amending Sec. 1, Art. III, providing for the initiative and referendum. (See VIII, *Popular Government and Current Politics.*)

Amending Sec. 1, Art. VIII, limiting the debt for state capitol to $2,000,000.

Amending Sec. 2, Art. III, fixing the number of senators and representatives in the state legislature.

Adding a provision for the recall of any public officer except judges. (See VIII, *Popular Government and Current Politics.*)

Repealing Sec. 3, Art. XIII, limiting the labor of convicts to that done within the prison grounds (See XVI, *Labor and Labor Legislation.*)

Amending Sec. 2, Art. IX, authorizing the appointment of a state board of education.

Indiana.—The legislature proposes an entirely new state constitution to be voted on in 1912. (See Chap. 118, Session Laws 1911.) It is quite detailed in its provisions, but does not contain provisions for the initiative, referendum or recall, except in Sec. 20, Art. VII, which permits the legislature on the petition of 25 per cent. of the qualified voters of the state at the last general election to adopt laws for the initiative and referendum and for the recall of officers except judges. (See VIII, *Popular Government and Current Politics.*)

Kansas.—To be voted on in 1912:

Adding Sec. 8 to Art. V, granting suffrage to women.

Maine.—

Proposing abrogation of Amendment XXVI to the constitution of 1884, relating to the manufacture and sale of intoxicating liquors. Defeated.

Amending Art. XXII so as to permit cities of 40,000 or more inhabitants to increase their municipal indebtedness to 7½ per cent. of the last regular valuation of said city.

Amending the constitution so as to declare Augusta to be the state capital.

Massachusetts.—Submitted at the November election:

Amending Art. X of Part I authorizing the legislature by special acts to authorize the taking in fee by the Commonwealth of lands for laying out, widening or relocating highways or streets. Adopted.

Amending the constitution so as to authorize the use of voting machines at all elections. Adopted.

To be submitted to the next legislature:

Amending the constitution disqualifying from voting persons convicted of certain offenses.

Amending the constitution relative to the taxation of wild or forest lands.

Michigan.—

Amending Sec. 9, Art. XI, relative to the apportionment of primary school interest money. Ratified by the people, April, 1911.

Minnesota.—To be voted on in 1912:

Amending Sec. 17, Art. IV, so as to permit cities and villages to frame their own charters.

Amending Sec. 6, Art. VIII, to provide for the investment of state school funds in improved farm loans.

Amending Sec. 16, Art. IX, to establish a road and bridge fund and to authorize the legislature to levy a tax therefor.

Amending Sec. 36, Art. IV, as to number and apportionment of state senators and representatives in the legislature.

Amending Sec. 7, Art. VII, to provide for the educational and professional qualifications of county superintendents.

Sec. 17, Art. IX, to authorize the levy of an acreage tax for insurance against damages by hail and wind storms.

Missouri.—To be voted on in Nov., 1912:

Amending Sec. 1, Art. XI, relating to free public schools.

Amending Sec. 11, Art. X, increasing the limit of indebtedness of certain municipalities.

Amending the constitution so as to allow the County of St. Louis to increase its debt for the purpose of constructing sewers or buying waterworks.

Amending Sec. 2, Art. VIII, fixing the time a citizen must have resided in the state and county before being entitled to vote.

Amending the constitution so as to require the registration of voters in all counties of more than 50,000 in-

habitants and adjoining cities having more than 300,000 inhabitants.

Submitted in Aug., 1911, and adopted:

Amending the constitution to authorize an issue of $3,500,000 for the state capitol.

Nebraska.—To be voted on in 1912:

Amending Sec. 1, Art. III, so as to reserve to the people the powers of initiative and referendum.

Amending Sec. 4, Art. III, as to the term of office and compensation of the members of the legislature.

Amending Sec. 19, Art. V, as to number of commissioners of state institutions.

Amending Sec. 5, Art. VI, as to the number and terms of office of Supreme Court Judges.

Amending Sec. 13, Art. XVI, providing for biennial elections.

Amending the constitution so as to allow cities of more than 5,000 inhabitants to frame their own charters.

Nevada.—To be submitted to the next legislature:

Adding Sec. 3 to Art. XIX reserving the powers of the initiative and referendum to the people.

Adding Sec. IX to Art. II authorizing the recall of public officers.

Amending Sec. 3, Art. XI, appropriating certain revenues for educational purposes.

Amending Sec. 8, Art. I, as to indictments in criminal cases.

Amending Sec. 3, Art. XV, declaring duellists ineligible to any office, and females eligible to certain offices.

Amending Sec. 1, Art. II, extending the suffrage to women.

Amending Sec. 2, Art. XV, changing and shortening the form of official oath.

New Hampshire.—

Providing for a state constitutional convention, the members to be chosen at the election held on the second Tuesday of March, 1912.

New York.—All defeated:

Amending Sec. 6, Art. III, increasing the salaries of state senators and assemblymen.

Amending Sec. 2, Art. VI, omitting the provision that the justices of the appellate division in each department shall have power to fix the times and places for holding special terms therein, and to assign the justices to hold such terms; or to make rules therefor.

Amending Sec. 14, Art. VI, providing for the election of two additional county judges in the County of Kings.

Amending Sec. 6, Art. I, relating to taking private property for public use by municipal corporations.

Amending Sec. 4, Art. IV, increasing the salary of the governor to $20,000.

Amending Sec. 8, Art. VII, regulating the abandonment of canals and the use of funds derived from such abandonment; defining the use of the word "canal" and extending the prohibition against disposing of certain canals of the state and properties used in connection therewith.

Amending Sec. 7, Art. I, authorizing the Supreme Court with or without a jury to ascertain the compensation to be made when private property is taken for public use when such compensation is not made by the state.

North Dakota.—The legislature agreed to the following amendments proposed by the preceding legislature, which are now to be submitted to the people:

Empowering the state to acquire and operate terminal elevators in Minnesota and Wisconsin or any other state.

Amending Sec. 158, Art. IX, as to the sale of school lands to railroads.

Amending Sec. 91, fixing the term of Supreme Court judges at ten years.

The following amendments were proposed and are to be submitted to the next legislature:

Adding an article subjecting every public officer to the recall.

Amending the constitution so as to reserve to the people the powers of the initiative and referendum.

Amending Sec. 202, Art. XV, as to the future amendments of the constitution.

Amending Sec. 176 relating to uniformity of taxation, etc.

Amending Sec. 216, Art. XIX, pertaining to public institutions.

Amending Sec. 185, Art. XII, relating to state aid for internal improvements.

Ohio.—The legislature passed an act providing "for the election to, and assembling of a convention to revise, alter, or amend the Constitution of the State," pursuant to the vote of the state at the November election of 1910. The members were elected in Nov., 1911, and are to as-

semble in Columbus on the second Tuesday of Jan., 1912. (Session Laws 1911, pp. 298-303.)

Oklahoma.—To be voted on April 25, 1912:

Amending Sec. 9, Art. IX, as to railroads and transportation companies exercising power of eminent domain, etc.

To be submitted at the general election in 1912:

Adding Sec. 31 to Art. X, empowering the legislature to levy certain taxes in aid of common schools.

Oregon.—To be submitted in 1912:

Amending Sec. 8, Art. V, relative to the person to act as governor and lieutenant governor in case of death, impeachment or absence from the state of such officer.

Amending Sec. 1, Art. IX, providing for a uniform taxation.

Amending Sec. 32, Art. I, defining the proper purpose of taxation.

Amending Sec. 1*a*, of Art. IX, prohibiting a poll or head tax.

Amending the constitution so as to grant suffrage to women.

Amending Sec. 3, Art. XI, as to liability of stockholders in corporations and joint stock companies.

Amending Sec. 1, Art. XVII, as to the method of amending the constitution.

Pennsylvania.—

Authorizing Philadelphia to increase its indebtedness for certain municipal improvements. Adopted.

Amending Art. V, Sec. 6, so as to consolidate the courts of Common Pleas of Allegheny County. Adopted.

Amending Art. IX, Sec. 4, authorizing the issue of state bonds to the amount of $50,000,000 for highway improvements.

Amending Art. III, Sec 7, so as to permit special legislation regulating labor.

Amending Art. VIII, Sec. 3, extending the terms of office of certain judges.

Amending Art. IX, Sec. 1, authorizing the classification of certain subjects of taxation.

Amending Art. IX, Sec. 15, Regulating and defining the increase of indebtedness of counties and municipalities.

Rhode Island.—

Amending Sec. 2, Art. XI, providing for biennial elections instead of annual elections of state officers, including senators and representatives in the General Assembly. Adopted.

South Carolina.—The various proposed amendments to the state constitution set forth in the YEAR BOOK for 1910 were approved by the voters at the general election of 1910 and duly ratified by the legislature of 1911. (See *Session Laws*, pp. 9, 11, 12, 13, 15, 25, 117, 119 and 225.)

South Dakota.—

Amending Sec. 2, Art. XI, as to uniform taxation.

Chapter 87 provides a new method of presenting constitutional amendments to the electors.

Texas.—

Amending Sec. 20, Art. XVI, prohibiting the manufacture for sale and sale of intoxicating liquors within the state after the second Tuesday of Jan., 1912. Defeated.

Amending Sec. 5, Art. XI, so as to permit cities of more than 5,000 inhabitants to adopt their charters by a popular vote.

Adding Sec. 58 to Art. XVI, creating a board of prison commissioners.

Adding Sec. 30 to Art. XVI, relative to the election and appointment of a board of regents and various other boards of education for eleemosynary and penal institutions.

Amending Sec. 51, Art. III, authorizing the grant of aid to indigent confederate soldiers and others.

Utah.—

Amending Sec. 1, Art. XI, relating to counties, cities and towns as legal subdivisions of the state. Adopted.

Amending Sec. 2, Art. XIII, as to taxation. Adopted.

Amending Sec. 11, Art. XIII, relating to the state and county boards of equalization. Adopted.

Amending Sec. 4, Art. XIII, relating to the taxation of mines. Adopted.

Amending Sec. 17, Art. VII, as to duties of state auditor and treasurer.

Amending Sec. 4, Art. XIV, fixing the limit of indebtedness of counties, cities, towns and school districts.

Amending Sec. 9, Art. VI, fixing the compensation of legislators at $8 per day and ten cents mileage each way. Adopted.

Vermont.—To be submitted:

Amending Art. XI of the amendments of the constitution so as to require a

two-thirds vote instead of a majority vote of the members present to pass a bill over the governor's veto.

Amending Sec. 1, 2, 4 and 5 of Art. XXIV, fixing the opening day of the sessions of the legislature on the first Wednesday after the first Monday of Jan., 1915, and biennially thereafter.

Amending Sec. 14, as to printing and distributing session laws.

Amending Sec. 20, Chap. II, prohibiting the legislature from remitting or mitigating the punishment of one convicted of treason or felony.

Adding amendment 30, providing for incorporation under general laws only.

Adding amendment 31, that the term "Justice" be applied to judges of the Supreme Court of the state.

Adding Amendment 32, authorizing the legislature to pass laws compelling compensation for personal injuries received by employees in the course of their employment.

Adding Amendment 33, empowering the judges of the Supreme Court to revise Chapter II of the constitution for incorporating all amendments to the constitution and excluding all repealed or superseded portions.

Washington.—To be voted on in 1912:

Amending Sec. 7, Art. XI, making county treasurers ineligible for more than two terms in succession.

Amending Sec. 1, Art. II, relating to legislative powers by reserving the initiative and referendum to the people.

Amending Art. I by adding Sec. 33 and 34, subjecting all elective public officers except judges of courts of record to recall.

West Virginia.—To be submitted in 1912:

Striking out Sec. 46, Art. VI, and substituting therefor a section prohibiting the manufacture and sale of intoxicating liquors.

Wisconsin.—

Amending the constitution authorizing the legislature to enact laws for the initiative and referendum and recall. (See VIII, *Popular Government and Current Politics.*)

Extending the suffrage to women is to be subject to popular vote in the general election of 1912.

Amending Art. IV, Sec. 21, as to compensation of legislators. Adopted.

Amending Art. IV, Sec. 3, relating to apportionment in the state. Adopted.

Amending Art. VIII, Sec. 10, relating to internal improvements. Adopted.

Wyoming.—To be voted on:

Amending Sec. 1, Art. III, securing to the people the powers of initiative and referendum.

LEGISLATIVE TENDENCIES

The Sixty-first Congress.—During the past year the Sixty-first Congress held its third session, and the Sixty-second Congress met in special session. However, but little legislation of special consequence was enacted by either. The principal statutes passed at the regular session were the following:

Chapter 105, providing for the purchase or erection of embassy, legation and consular buildings in various countries.

Chapter 186, giving the consent of Congress to each of the several states in the Union to enter into agreements or compacts with any other state or states for the purpose of conserving the forests and the water supply of the states entering into such agreement or compact. The act makes an appropriation to enable the Secretary of Agriculture to coöperate with any state or group of states in protecting forested watersheds of navigable streams from fire. (See XIX, *Forestry.*)

Chapter 231, codifying, revising and amending the laws relative to the federal judiciary. This was the subject of an instructive paper read by Justice Brown of the United States Supreme Court (retired) at the annual meeting of the American Bar Association in August.

The Sixty-second Congress.—The special session resulted in the enactments of the following important statutes:

An Act to promote reciprocal trade relations with the Dominion of Canada, known as the Reciprocity Act.

An Act apportioning representatives in Congress among the several states, fixing the membership of the House at 433.

An Act providing for the publicity of contributions at the elections for

representatives in congress, limiting the expenditure by any candidate for representative to $5,000, for senator to $10,000. It contains rather drastic provisions for sworn statements to all expenditures. (See VIII, *Popular Government and Current Politics.*)

Legislative Activity.—In his annual address President Farrar of the American Bar Association, said:

> Forty-one states, two territories and three insular possessions have had legislative sessions this year, and in some of the states these sessions have been unusually prolonged. In Tennessee the session was interrupted by a legislative strike. Thirty-four members, enough to break the quorum, left the state and remained for a considerable time outside of her boundaries. . . . As a result of all this legislative activity, more than 9,000 statutes have been added to the aggregate of the laws of our country. Most of them are local, trivial and formal. As an illustration of the manner in which all of this legislative activity is regarded, one of the Vice-Presidents, in making to me his report for his state, says, "Thank the Lord our Legislature did not meet this year."

Occasion for such thanksgiving was not vouchsafed to most of our states. In New York the legislative session extended over an extraordinary period from Jan. 2 to Oct. 6, with two periods of recess, and resulted in the enactment of about 900 laws. The legislative activity in California was also marked. In a session of 85 days more than 3,000 bills and resolutions were introduced in the two Houses, of which more than 1,000 were passed, and of which 753 received executive approval. Apparently the members were appalled by their own work, for they sent to the people, and the people ratified, a constitutional amendment limiting legislative sessions to 30 days, with authority to reconvene after a recess of not less than 30 days. At such adjourned sessions, however, no member of either House is to introduce a bill without the consent of three-fourths of all its members, and no member may introduce more than two bills.

The legislators of Georgia displayed little productivity. They testified to their acquaintance with lobbyists by passing an act prohibiting lobbying, but decided that "the best service they could render the state was to pass few statutes and not to change existing laws." A similar feeling appears to have prevailed in Iowa, in Missouri, in Nevada, in North Carolina (where the volume of Session Laws is less than a third that of 1909), and in Rhode Island.

Texas has enjoyed three meetings of the legislature since July 19, 1910, but her volume of Session Laws is one of very modest dimensions, excelled in that respect only by those of West Virginia and Wyoming.

Progressive Legislation appears to be popular both at Washington and at the state Capitols. The congressional appropriation, referred to above, in connection with agreements between states for the conservation of forests and water supply, testifies to that, as do statutes in California, Colorado and Nevada regulating the use of streams and lakes by various industries, limiting the taxation of lands used for timber culture, and encouraging the reclamation of arid land by artesian wells and other methods. Idaho, Maine, Nebraska and Vermont seek to save existing trees and shrubs, as well as ordinary crops from the ravages of noxious insects and diseases, by horticultural inspection and the diffusion of expert knowledge on the subject among their citizens. Delaware has followed the example of other states in legislating for the preservation of birds. The regulation of child labor has been the subject of legislation, more or less drastic in its character, in Colorado, Connecticut, Delaware, Massachusetts, Missouri, New Hampshire, South Carolina and Vermont. The hours of labor for adults, especially for women, and the conditions in which such labor is to be performed, have been prescribed with much particularity in California, Colorado, Indiana, Maine, Massachusetts, Oregon and South Carolina. The payment of wages weekly to employees in mining and manufacturing concerns is now required in Indiana and contracts violating this statute are declared void; while Massachusetts

compels manufacturers employing 100 or more servants to pay them before the close of business hours on pay day. The special interest of legislators in the welfare of laborers is further shown by statutes passed in the following states, extending the liabilities of employers and the right of workmen to compensation for injuries: California, Delaware, Indiana, Kansas, Massachusetts, Nevada, New Hampshire, New Jersey, South Dakota, Washington and Wisconsin. (See XVI, *Labor and Labor Legislation.*) Congress also passed an act compelling common carriers in interstate commerce to equip locomotives with safe and suitable boilers and appurtenances, and providing a system of inspection for such boilers and appliances. Iowa (House File No. 317) and New Jersey (Chap. 190 L. 1911) have entered upon the interesting experiment of preventing the procreation of habitual criminals, idiots, feeble-minded and inebriates. (See XVII, *Prevention, Correction, and Charity.*) Indeed, New Jersey easily bears off the palm for progressive legislation during the current year.

Sanitation laws have increased in numbers and in particularity. Alabama requires hotels and restaurants to furnish clean, fresh bed linen, towels, etc., to guests; properly to screen windows and doors, especially those of kitchens, against flies and mosquitoes and to post in a conspicuous place a copy of the statute imposing these duties. The public drinking cup has been put under legislative ban in Hawaii, Illinois, New Hampshire, New Jersey and New York, while Massachusetts imposes upon railroads the duty of furnishing individual drinking cups for the use of passengers. Illinois has made it unlawful for any municipal corporation in that state to establish or maintain the tuberculin test for milch cows; but the tendency of legislation is quite opposite to this, as shown by Alabama's statute authorizing the destruction of cows suffering from tuberculosis and Idaho's act providing for the careful inspection and testing of milk. (See XXII, *Agricultural Legislation.*) Laws passed in Delaware, Indiana, Iowa, Maine, Montana, Oklahoma, Pennsylvania and South Dakota aiming to secure pure food, the honest labelling of food products, the careful regulation of cold storage warehouses, the disinfecting of houses in which persons have died from tuberculosis, the prevention of embalming and transporting bodies of those who have died of contagious diseases, and to encourage the use of antitoxin, all indicate a paternal interest on the part of legislators in the health of their constituents. Nebraska has deemed it important to prohibit the practice of mesmerism.

Sumptuary laws, including the sale and use of intoxicating liquors, tobacco, cocaine or similar articles have been passed in Alabama, California, Colorado, Minnesota, Oklahoma, Utah and West Virginia. (See also VII, *Criminal Law*, and XV, *The Liquor Traffic.*) On the other hand, South Dakota repealed her anti-treat bill of 1909, having found it unenforceable. This statute made it an offense, punishable with a fine of $5.00 to $10.00 for the first violation and $10.00 to $20.00 for any subsequent one, to treat or give free drinks of intoxicating liquors in a place where they are sold, or to accept free treats there.

Juvenile courts were established by legislation in Arkansas, Delaware, Missouri, Montana and North Dakota, and statutes relating to them were amended in California and Nevada. From this it appears that the juvenile delinquent is receiving much careful consideration from legislators as well as from social reformers. (See XVII, *Prevention, Correction and Charity.*)

Miscellaneous.—South Dakota indulged in a very careful codification of its railroad laws. Legal holidays are increased in Nebraska and Pennsylvania. Slander is now defined and punished as a crime in Porto Rico. The commission form of government received legislative approval in Alabama, California, Iowa, Montana, Nebraska, New Jersey, Utah and Wyoming. (See XI, *Municipal Government.*) The last named state prohibits and punishes the sale of commodities in one section of the state at a lower price than in others, when

made by the seller for the purpose of destroying competition. The act is aimed, apparently, at the wealthy individual or corporation who seeks by crushing competition to gain a monopoly of local markets. Connecticut has the honor of enacting the first important statute on the new subject of aviation—a statute suggested by Governor Baldwin.

JUDICIAL DECISIONS

CONSTITUTIONAL LAW

Assaults upon the constitutionality of federal and state statutes show no signs of abating. Indeed, the growing legislative tendency (heretofore described) to indulge in statutory experiments must necessarily result in raising an increasing number of constitutional questions.

General Principles.—The courts continue to recognize the doctrine that their power to declare a statute unconstitutional should be exercised "only under the clearest and most positive conviction that a constitutional provision has been violated thereby": Carr v. State, (Ind.), (93 N. E. 1071, Feb. 23, 1911), sustaining by a divided court a law exempting baseball playing from the general prohibition of Sunday work; State v. Phillips (Me.) (78 At. 283, Nov. 2, 1910), sustaining a statute prohibiting the use of automobiles in certain towns on the island of Mt. Desert; Commonwealth v. Herr (229 Pa. 132, 78 At. 68, July 1, 1910), sustaining an act providing that no teacher in a public school shall wear in the school or while engaged in the performance of his duty as a teacher any dress, emblem, or insignia indicating the fact that he is a member or adherent of any religious order, sect, or denomination; South Park Commissioners v. Ward (248 Ill. 299; 93 N. E. 910, Feb. 8, 1911), declaring unconstitutional acts of the legislature permitting the erection and maintenance of certain buildings in a public park; Polzin v. Rand, McNally & Co. (250 Ill. 561, 95 N. E. 623, June 20, 1911).

Division of Governmental Powers.—In the case last cited the Supreme Court of Illinois is quite careful to point out the limits upon the power of the legislature and to insist upon a recognition of the rights of the judiciary. It said:

> Questions of the necessity and propriety of the exercise of the right of eminent domain are legislative and not judicial. But . . . the legislature cannot authorize the taking of the property of the citizen for illegal uses, and the courts are not without power to determine that question. . . The courts have a right to determine whether the use to which it is sought to appropriate the property is a public use; whether such use or purpose would justify the exercise of compulsory taking of private property under the statute and the Constitution.

In Muskrat v. U. S. (219 U. S. 346, 31 Sup. Ct. R. 250, Jan. 23, 1911), the Supreme Court refused to sustain an act of Congress which attempted to impose upon that court duties which were not strictly judicial.

> The whole purpose of the law, said the Court, is to determine the constitutional validity of this class of legislation in a suit not arising between parties concerning a property right necessarily involved in the decision in question, but in a proceeding against the government in its sovereign capacity, and concerning which the only judgment required is to settle the doubtful character of the legislation in question. Such judgment will not conclude private parties, when actual litigation brings to the court the question of the constitutionality of such legislation.

It was therefore held that Congress exceeded its legislative authority in attempting to require of the courts action not judicial in character. Judicial power, it was declared, is limited by the constitution to the determination of actual controversies arising between litigants, duly instituted in courts of proper jurisdiction. In Southern Pac. Terminal Co. v. Int. Com. Comm. (219 U. S. 498, 31 Sup. Ct. R. 279, Feb. 20, 1911), it was held that a case is not moot (and hence not a subject of judicial de-

cision) merely because the particular order of the Interstate Commerce Commission involved has expired, where interests of a public character are asserted by the government under conditions that may be immediately repealed by the Commission. In Buck's Stove & Range Co. v. Am. Fed. of Labor (219 U. S. 581, 31 Sup. Ct. R. 471, Jan. 27, 1911), it developed from statements made by counsel that the parties had settled every material controversy which the record presented, and the court refused to entertain further jurisdiction, on the ground that the case had become purely moot. (See XVI, *Labor and Labor Legislation.*) An Act to regulate the employment of expert witnesses has been declared unconstitutional, because it imposed upon the court the duty of appointing experts to testify in criminal cases for homicide—a duty which has always been deemed executive or administrative: People v. Dickerson (164, Mich. 148, 129 N. W. 199, Dec. 30, 1910). The rights of the judiciary are unconstitutionally invaded by a statute requiring the receivers of banks appointed by courts to turn over the liquidation of such banks to the bank examiner; State (Nev.) v. Wildes (—— Nev. ——, 116 Pac. R., 595, June 26, 1911.) Also by legislation attempting to interfere with the existence or supremacy of the Supreme Court of a state, when that tribunal is placed at the head of the judicial system by the state Constitution: (Ex parte France, —— Ind. ——, 95 N. E. 515, Jan. 21, 1911.) Whether an amendment to the constitution has been properly proposed and adopted is generally a judicial question: Hammond v. Clark (136 Ga. ——, 71, S. E. 479, May 11, 1911). An attempt by the legislature to interfere with action taken by the judicial or by the executive department under existing laws, is unconstitutional: (Opinion of Justices, 208 Mass. 610, 94 N. E. 852.)

Advisory Opinions.—The Supreme Court of Massachusetts has been called upon for an unusual number of these opinions during the present year. It advised the legislature that a statute which should attempt to make it a criminal offense for any woman under the age of 21 to enter a hotel or restaurant conducted by Chinese, would be in violation of the Fourteenth Amendment of the Federal Constitution, in denying to persons of the Chinese race the equal protection of the laws, and that it would not be a proper exercise of the police power (207 Mass. 601).

Another proposed statute was characterized as unconstitutional as impairing the right of trial by jury (207 Mass. 606). On the other hand, the court advised the legislature that it could constitutionally permit a city or town owning land on both sides of a street to erect a bridge over such street connecting the buildings on such premises (208 Mass. 603). A statute making it a criminal offense to engage in any gift enterprise would be unconstitutional (*Ibid.* 607). Another opinion related to the power of the governor to interfere with certain proposed legislation in any other way than by veto (*Ibid.* 610). Another question was not answered, because the court declared it was under no duty to give an answer. (*Ibid.* 614.) The court did not hesitate, however, to inform the legislature that a statute imposing a different rate of taxation upon personal property from that imposed upon real estate would be unconstitutional, and that the legislature had no power to impose an excise tax on the mere ownership or possession of any kind of personal property (*Ibid.* 616). It also declared that by the law of the land as determined by the Supreme Court of the United States, a state cannot limit a citizen in the exercise of his right to make contracts by a statute forbidding his employment for more than eight hours a day; but that the state or a municipality may be prohibited by statute from employing in its public work, a laborer, workman or mechanic more than eight hours a day. (*Ibid.* 619, 94 N. E. 1044.) Still another opinion is devoted to stating elementary rules of law upon a number of topics. (*Ibid.* 625.)

Supremacy of Federal Law.—This is expressly declared by Art. 6, Sec. 1, Cl. 2 of the Federal Constitution, and was recognized in Fry v. So.

Pac. Co. (247 Ill. 564, 93 N. E. 906, Feb. 8, 1911), which holds that an Act of Congress providing that a carrier engaged in interstate business shall furnish the shipper a bill of lading to destination of shipment, and shall be liable for damages to the shipment caused by any carrier over whose line the shipment passes on its journey to such destination, is valid and enforceable by actions in state courts. The validity of this statutory provision, popularly known as "Carmack's Amendment," is affirmed in Atlantic Coast Line v. Riverside Mills (219 U. S. 186, 31 Sup. Ct. R. 164, Jan. 3, 1911). The supremacy of a valid Federal statute over a conflicting statute of a state on the same subject is also declared in Chic. Ind. & L. Ry. v. U. S. (219 U. S. 486, 31 Sup. Ct. R. 272, Feb. 20, 1911). See Bailey v. Alabama (219 U. S. 219, 31 Sup. Ct. R. 145, Jan. 3, 1911), asserting the supremacy of the anti-peonage acts over state legislation. State laws will not be overthrown, however, by federal courts simply because they do not approve of the legislation or because they deem it unwise or inexpedient. It must conflict with the federal constitution, or with laws and treaties validly made thereunder: Brodnax v. Missouri (219 U. S. 285, 31 Sup. Ct. R. 238, Jan. 9, 1911). See House v. Mayes (219 U. S. 270, 31 Sup. Ct. R. 234, Jan. 9, 1911), affirming the right of the state to exercise its police power without interference by the United States. In Coyle v. Oklahoma (221 U. S. 559, 31 Sup. Ct. R. 688, May 29, 1911), it was declared:

> When a new state is admitted into the Union, it is so admitted with all of the powers of sovereignty and jurisdiction which pertain to the original states, and that such powers may not be constitutionally diminished, impaired or shorn away by any conditions, compacts or stipulations embraced in the act under which the new state came into the Union, which would not be valid and effectual if the subject of Congressional legislation after admission.

Hence Oklahoma was at liberty to change its capital notwithstanding a provision to the contrary, in the act under which it gained admission to the Union.

Ex post facto laws, which are prohibited by Art. I, Sec. 10 of the federal constitution, are those relating to criminal punishment. They do not include laws of retroactive nature imposing taxes or providing remedies for their assessment and collection not impairing vested rights: Kentucky Union v. Kentucky (219 U. S. 140, 31 Sup. Ct. Rep. 171, Jan. 3, 1911); nor laws changing the remedy in favor of creditors of a *cestui que trust:* Brearley School v. Ward (201 N. Y. 358, 94 N. E. 1001, March 28, 1911). In the latter case, the statute permitted judgment creditors to secure an order of the court that executions issue against 10 per cent. of a trust fund, though the fund was created by a will prior to the passage of the act. A statute does not violate the *ex post facto* prohibition which gives to an existing court new jurisdiction over past offenses, if it makes no change in rules of evidence or in the punishment prescribed for such offenses: People v. Green (201 N. Y. 172, 94 N. E. 658).

Freedom of Contract.—The courts continue to treat the constitutional guaranty on this subject as qualified and not absolute. Liberty implies absence of arbitrary restraint, not immunity from reasonable regulations. Hence a state has power to prohibit contracts, limiting liability for injuries, entered into in advance of the injury received: Chicago B. & C. Ry. v. McGuire (219 U. S. 549, 31 Sup. Ct. R. 259, Feb. 20, 1911). Congress has power to forbid every contract reasonably calculated injuriously to affect public interests, e. g., a contract by the initial carrier limiting his liability to his own line: Atlantic Coast Line v. Riverside Mills (219 U. S. 186, 31 Sup. Ct. R. 164, Jan. 3, 1911); also to invalidate contracts already made which are rendered illegal by subsequent valid legislation, e. g., a contract by a railroad company to issue free interstate transportation to one as compensation for injury done to his land: Louisville & N. Ry. v. Mottley (219 U. S. 467, 31 Sup. Ct. R. 265, Feb. 20, 1911). See Griffith v.

Conn. (218 U. S. 563, 31 Sup. Ct. R. 132, Dec. 12, 1910), affirming 83 Conn. 1, 74 At. 1068: Provident Inst. etc. v. Malone (221 U. S. 660, 31 Sup. Ct. R. 661, May 29, 1911), affirming 201 Mass. 23, 86 N. E. 912; Fifth Ave. Coach Co. v. City of New York (221 U. S. 467, 31 Sup. Ct. R. 709, May 29, 1911), affirming 194 N. Y. 19, 86 N. E. 824, 21 L. R. A. N. S. 744; McNamara v. Washington Terminal (35 App. D. C., May 10, 1910). Freedom of contract was not unreasonably interfered with by the Missouri statute making it criminal for the purchaser to deduct from the actual weight of grain, seed, hay or coal, an amount fixed by a board of trade of which the purchaser and seller were members: House v. Mayes (219 U. S. 270, 31 Sup. Ct. R. 234, Jan. 9, 1911); nor by another statute of the same state, making it criminal to keep a place where purchases or sales are made of stocks, bonds, grain, cotton, etc., on margins, without a record of such sales: Brodnax v. Missouri (219 U. S. 285, 31 Sup. Ct. R. 238, Jan. 9, 1911), affirming 228 Mo. 25, 128 S. W. 177; nor by the statute of Alabama making it criminal for any officer of a municipality to act as attorney for any public-utility corporation doing business within the limits of such municipality: Boone v. State (Ala.) (54 So. 109, Jan. 14, 1911).

Invading Personal Rights.—In Bailey v. Alabama (219 U. S. 219, 31 Sup. Ct. R. 145, Jan. 3, 1911), the Supreme Court held (though not without a vigorous dissent by Justices Holmes and Lurton), that "although a state statute in terms be to punish fraud, if its natural and inevitable purpose is to punish as for a crime the failure to perform contracts of labor, thus compelling such performance, it violates the Thirteenth Amendment," by subjecting the violators of labor contracts to involuntary servitude. Since the foregoing decision, the statute in question has been so amended as to subject laborers to arrest and imprisonment for actual fraud in connection with their labor contracts (Sess. Laws, 1911, p. 93). (See also *infra, Criminal Law.*) In House v. Mayes (219 U. S. 270, 31 Sup. Ct. R. 234, Jan. 9, 1911), it was held that no personal right was invaded by a statute which made it a penal offense for any purchaser of grain, seed, hay or coal to deduct any amount from the actual weight or measure thereof, under claim of right to do so by reason of any custom or rule of a Board of Trade, or on any pretense whatsoever. In Gavieres v. U. S. (220 U. S. 338, 31 Sup. Ct. R. 421, April 3, 1911), it was held that a person's right not to be put in double jeopardy for the same offense, is not invaded by being punished for the breach of an ordinance against drunkenness and rude and boisterous language, and also for a breach of another ordinance against insulting a public officer, although the latter charge was based on the same language and conduct as the former. The same act constituted separate offenses. A person is not put in double jeopardy by a statute which subjects him to double or treble damages for cutting and removing timber from state lands, and also to fine and imprisonment therefor: Shevlin-Carpenter Co. v. Minn. (218 U. S. 57, 30 Sup. Ct. R. 663, May 31, 1910). The prohibition of the Fifth Amendment against compelling a man in a criminal court to be a witness against himself is a prohibition of the use of physical or moral compulsion to extort communications from him, not an exclusion of his body as evidence when it may be material. Hence, the testimony of a witness that the accused put on a blouse and it fitted him is admissible, even though he was compelled to put it on: Holt v. U. S. (218 U. S. 245, 31 Sup. Ct. R. 2, Oct. 31, 1910). The right to use one's powers and faculties in any reasonable way for the promotion of his interests is guaranteed by state and federal constitutions: Opinions of Justices, 208 Mass. 619, 94 N. E. 1044. But this right is not invaded by a statute which forbids treatment of the sick by one not possessing certain technical knowledge evidenced by a license. The practice of medicine or surgery is so closely related to the public health as to warrant the legislature in reasonably regulating it: State v. Smith (233

Mo. 242, 135 S. W. 465, March 7, 1911). Liberty of speech is not improperly interfered with by a statute which forbids depositing in the mails anything upon the exposed surface of which appears language scurrilous, threatening or defamatory. No one is free to do and say what he pleases at all times and under all circumstances. "The statute," said the court, "is a part of a body of legislation which is being gradually enlarged, and which is designed to exclude from the mails that which tends to debauch the morals of the people, or is contrived to despoil them of their property, or is an apparent, visible attack upon their good names": Warren v. U. S. (183 Fed. 718, Nov. 21, 1910).

Delegation of Powers.—Whether a statute undertakes to delegate legislative powers to administrative officers was carefully considered in U. S. v. Grimaud (220 U. S. 506, 31 Sup. Ct. R. 480), and Light v. U. S. (220 U. S. 523, 31 Sup. Ct. R. 485, May, 1911). Congress had conferred upon the Secretary of Agriculture authority to make such rules and regulations and establish such service as will insure the objects of certain forest reservations, and had declared that any violations of the statutes in question or of the rules and regulations therein authorized should be punished criminally. Violators of such rules and regulations insisted that they were void because Congress could not delegate its legislative power to the Secretary of Agriculture. But the court, while admitting the difficulty of defining the line separating legislative power to make laws from administrative power to make regulations, had no hesitation in declaring that the rules and regulations in these particular cases were authorized and adapted to administering the provisions of the statute, and did not rise to the dignity or rank of legislation. These decisions have given great satisfaction to the conservationists of natural resources, as they reversed U. S. v. Grimaud (170 Fed. 205).

Interstate Commerce.—What constitutes interstate commerce, and the extent to which state legislation may validly affect it, remain troublesome questions for the courts. The Court of Appeals of Kentucky has held that a corporation "engaged in the business of inquiring and reporting upon the credit and standing of persons engaged in business in that state," is not carrying on interstate commerce: U. S. Fidelity & Guar. Co. v. Comm. (139 Ky. 27, 129 S. W. 314, June 9, 1910), distinguishing Intern. Text Book Co. v. Pigg (217 U. S. 91). It has also been held that towing logs from one point on Lake Superior to another point within the same state is not interstate commerce: Ind. Tug Line v. Lake Sup. L. & G. Co. (——— Wis. ———, 131 N. W. 408, May 2, 1911). Selling the contents of packages, which have been imported into a state, is not interstate commerce (Ex parte Agnew, 131 N. W. 817, Neb., May 23, 1911). That the business of life insurance, conducted in one state by a corporation of another state is not interstate commerce, is reaffirmed in N. Y. Life Ins. Co. v. Deer Lodge Co. (115 Pac. 911, Mont., April 25, 1911). A statute requiring foreign railroads to incorporate in Kentucky before operating a domestic railroad therein, is not an attempt to interfere with interstate commerce: Plummer v. C. & O. R. of Ky. (143 Ky. 102, 136 S. W. 162, April 12, 1911). That the Federal Government has the power to regulate interstate commerce to the exclusion of state legislation is no longer open to doubt: B. & O. Ry. v. Interstate Com. Comm. (221 U. S. 612, 31 Sup. Ct. R. 621, May 29, 1911); Hipolite Egg Co. v. U. S. (220 U. S. 45, 31 Sup. Ct. R. 364, March 13, 1911); Chic. I. & L. Ry. v. U. S. (219 U. S. 486, 31 Sup. Ct. R. 272, Feb. 20, 1911). But the states may validly enact a variety of legislation which affects interstate commerce: Postal Tel. Co. of Mass. v. Chicopee (207 Mass. 341, 93 N. E. 927, Jan. 4, 1911), sustaining a city ordinance requiring every telegraph line licensed to erect poles in streets to permit other companies, for reasonable compensation to put their wires thereon; Vermilye v. Western U. Tel. Co. (207 Mass. 401, 93 N. E. 635, Jan. 5, 1911), upholding a state statute requiring telegraph companies to receive dispatches from any per-

son and transmit them impartially on payment of the usual charges. See also W. U. Tel. Co. v. Crovo (220 U. S. 364, 31 Sup. Ct. R. 399, April 3, 1911); State of Minn. v. U. S. Ex. Co. (131 N. W. 489, Minn., May 19, 1911), affirming the power of a state to tax the property within its borders of corporations engaged in interstate commerce.

The jurisdiction of federal courts over violations of the safety-appliance acts of Congress has been extended by the Supreme Court in a unanimous decision to all the cars of interstate railroads, whether at the moment they are used in interstate or in intrastate transportation. Said the court:

> Cars are seldom set apart for exclusive use in moving either class of traffic, but generally are used interchangeably in moving both; and the situation is much the same with trainmen, switchmen, and like employees, for they usually, if not necessarily, have to do with both classes of traffic. Besides, the several trains on the same railroad are not independent in point of movement and safety, but are interdependent; for whatever brings delay or disaster to one, results in disabling one of its operatives, is calculated to impede the progress and imperil the safety of other trains. And so the absence of appropriate safety appliances from any part of any train is a menace, not only to that train, but to others. (Southern Ry. v. U. S. ——— U. S. ———, 32 Sup. Ct. Rep. ———, Oct. 30, 1910).

A member of the Interstate Commerce Commission is reported to have expressed the belief that the decision means that there is to be no dual control of interstate carriers.

Deprived of Property.—An owner of legal tender coin is not unlawfully deprived of his property therein by legislative prohibition against exportation, although the bullion value in a foreign country exceeds the legal tender value of the coin: Ling Su Fan v. U. S. (218 U. S. 302, 31 Sup. Ct. R. 21, Nov. 14, 1910). Said the court: "However unwise a law may be aimed at the exportation of such coins, there can be no serious doubt that the power to coin money includes the power to prevent its outflow from the country of its origin." In Noble State Bank v. Haskell (219 U. S. 104, 31 Sup. Ct. R. 186, Jan. 3, 1911), affirming 22 Okla. 48, 97 Pac. 590, the court declared that "an ulterior public advantage may justify a comparatively insignificant taking of private property for what, in its immediate purpose, is a private use." In Lindsley v. Nat. Carbonic Gas Co. (220 U. S. 61, 31 Sup. Ct. R. 337, March 13, 1911), affirming 170 Fed. 1023, and accepting the interpretation of the statute involved approved by the Court of Appeals in Hathorn v. Carbonic Gas Co. (194 N. Y. 326, 87 N. E. 504), it was held that the statute did not operate to deprive the owner of the surface of his property though it prohibited him from pumping, on his own land, water, gas and oil in such quantities as to deplete the subterranean supply common to him and other owners to their injury. A statute prohibiting the use of the name, portrait or picture of any living person for advertising purposes, without written consent, does not deprive the owner of photographs, taken after the enactment went into effect, of his property in violation of the constitution: Sperry & Hutchinson Co. v. Rhodes (220 U. S. 502, 31 Sup. Ct. R. 490, May 1, 1911, affirming 193 N. Y. 223, 85 N. E. 1097).

Due Process of Law.—This phrase has been adjudicated upon in many cases during the year, and the end is not yet. As applied to criminal procedure it secures to the accused the right to be heard in a court of competent jurisdiction in a proceeding conducted according to the orderly processes of the law, and to be punished only after inquiry and investigation with opportunity to be heard: Ong Chang Wing v. U. S. (218 U. S. 272, 31 Sup. Ct. R. 15, Nov. 7, 1911). As applied to condemnation proceedings, it secures to the landowner the right to have the amount of compensation to which he is entitled fixed in an inquiry conducted in some appropriate way before some properly constituted tribunal: Appleby v. Buffalo (221 U. S. 524, 31 Sup. Ct. R. 699, May 29, 1911), affirming 189 N. Y. 163, 81 N. E. 954. The right is not denied as a rule by a trial court's refusal to continue the case: Franklin v. S. C.

(218 U. S. 161, 30 Sup. Ct. R. 640, Dec. 31, 1910). Nor does a statute deny the right of due process, when it punishes an offense without regard to actual intent: Shevlin-Carpenter Co. v. Minn. (218 U. S. 57, 30 Sup. Ct. R. 663, May 31, 1910). Nor is the right denied by a statute which gives the government the right of appeal from the trial court without according to the accused the same privilege: U. S. v. Heinze (218 U. S. 532, 31 Sup. Ct. R. 98, Dec. 5, 1910). In the matter of registering land titles, due process of law requires that there shall be jurisdiction of, and notice to, the parties, and opportunity to be heard; and non-resident owners may be brought before such tribunals by publication: American Land Co. v. Zeiss (219 U. S. 47, 31 Sup. Ct. R. 200, Jan. 3, 1911), sustaining one of the Torrens land laws of California, and approving Title & Document Restoration Co. v. Kerrigan (150 Cal. 289, 88 Pac. 356). Due process of law is not denied by legislation providing that proof of one fact shall constitute *prima facie* evidence of another, if there is a rational connection between the first and the second fact and the party affected has a reasonable opportunity to submit to the jury all the facts in the case: Mobile, J. & K. C. Ry. v. Turnipseed (219 U. S. 35, 31 Sup. Ct. R. 136, Dec. 19, 1910). Summary procedure in the assessment and collection of taxes does not deny to the taxpayer due process of law, if it allows him to be heard and is not arbitrary: Kentucky Union Co. v. Ky. (219 U. S. 140, 31 Sup. Ct. R. 171, Jan. 3, 1911), affirming 127 Ky. 667, 128 Ky. 610, 111 S. W. 362.

This topic received very careful consideration and a learned exposition in Ives v. South Buffalo Ry. (201 N. Y. 271, 94 N. E. 431, March 24, 1911), reversing 140 App. Div. 921, and declaring the Workmen's Compensation Act of that state (Ch. 674 of the Laws of 1910) unconstitutional, because it authorized the taking of the employer's property without his consent and without his fault and giving it to the employee, without a hearing in any judicial proceeding. For a criticism of this decision see *The Outlook* for July 9, 1911, at p. 709, an article signed by several eminent teachers of constitutional law.

The Police Power.—As we have seen, the freedom of contract may be restricted and private property be taken, and personal liberty be regulated notwithstanding the constitutional guarantee relating to these topics, when such interference with personal and property rights is reasonably necessary to protect the safety, health and welfare of the people. While this general principle is undisputed, there still remains great difficulty in determining whether particular statutes are a valid exercise of the police power or not. A learned judge has recently said: "With regard to the police power, as elsewhere in the law, lines are pricked out by the gradual approach and contact of decisions on the opposing sides" (Noble State Bank v. Haskell, 219 U. S. 104, 31 Sup. Ct. R. 299, Jan. 3, 1911). With the consent of all his brethren on the bench of the Supreme Court, he then proceeded to prick for the Oklahoma Guaranty Fund Act a hole on the constitutional side of the police-power line. On the same side is the Missouri statute prohibiting the keeping of a place for selling stocks, etc., on a margin without record of sale and stamp tax (Brodnax v. Missouri, 219 U. S. 285) and the statute of the same state to prevent fraud in the purchase of grain, etc. (House v. Mayes, 219 U. S. 270). The statute of Connecticut fixing maximum rates of interest on loans punches a hole on the same side: Griffith v. Conn. (218 U. S. 563, 31 Sup. Ct. R. 132, Dec. 12, 1910, affirming 83 Conn. 1, 74 At. 1068).

On the other side of the line falls the Oklahoma statute prohibiting foreign corporations from piping natural gas to places outside the state, although the state authorities claimed that the statute was passed in the interest of conservation: Oklahoma v. Kansas Nat. Gas Co. (221 U. S. 229, 31 Sup. Ct. R. 564, May 15, 1911). On this side, too, is the Workmen's Compensation Act of New York: Ives v. South Buffalo Ry. (201 N. Y. 271). "It does

nothing," said the court, "to conserve the health, safety or morals of the employees, and it imposes upon the employer no new or affirmative duties or responsibilities in the conduct of his business. . . . The right of governmental control must be confined to such reasonable enactments as are directly designed to conserve the health, safety, comfort, morals, peace and order."

Corporation Tax Law.—The constitutional validity of Sec. 38 of the Tariff Act of 1909, imposing a special excise tax on corporations, joint stock companies or associations organized for profit and having a capital stock represented by shares, was stoutly assailed by numerous interests, but was unanimously sustained by the Supreme Court in Flint v. Stone Tracy Co., and fourteen other cases argued with it (220 U. S. 107, 31 Sup. Ct. R. 342, March 13, 1911). The tax was viewed by the court, not as a direct tax, but an excise on the privilege of doing business in a corporate capacity, and properly measured by the entire income of the party subject to it. Although this section of the Act originated in the Senate it was an amendment to the Tariff Act which originated in the House and hence not a violation of Sec. 7, Art. I. It was not a tax on the governmental operations of the states, but on those who are doing business of a private character, though under franchises granted by the states. The court reiterated the doctrine that the constitutional limitation of uniformity in taxes does not require equal application of the tax to all coming within its operation, but secures geographical uniformity throughout the United States. If such a tax operates unequally on the subject matter, wherever found, its geographical uniformity is not affected by the fact that it may produce unequal results in different parts of the Union. As Congress has the right to select objects of excise taxation, it may exempt therefrom certain business organizations, such as those whose income falls below $5,000 a year, as well as labor, agricultural, fraternal, loan and building associations, and those for religious, charitable or educational purposes. The court also held that the provision was not invalid as violating the Fourth Amendment against unreasonable searches and seizures. In Eliot v. Freeman (220 U. S. 178, 31 Sup. Ct. R. 360), the court held that a trust for the purpose of purchasing, improving, holding and selling land, is not within the Corporation Tax Law. In Zonne v. Minneapolis Syndicate (220 U. S. 187, 31 Sup. Ct. R. 361), it was held that a corporation, whose sole purpose is to hold title to a single parcel of real estate, subject to a long lease, to receive and distribute the rentals arising therefrom and the proceeds of disposition of the land, is not subject to the tax, as it was not engaged in doing business.

Suits Between States.—By the federal constitution the states of the Union are compelled to submit their controversies to the federal judiciary. A case, thus brought by one state against another, "is to be considered in the untechnical spirit proper for dealing with a quasi-international controversy, remembering that there is no municipal code governing the matter, and the federal courts may be called on to adjust differences that cannot be dealt with by Congress or disposed of by the legislatures of either state alone" (Holmes, J., in Virginia v. West Virginia, 220 U. S. 1, 31 Sup. Ct. R. 330, March 6, 1911). That case was brought to have West Virginia's proportion of the public debt of Virginia, as it stood before 1861, ascertained and satisfied. The court stated the principles in accordance with which that proportion should be determined, and then decided to await the effect of a conference between the litigants, leaving the question of interest and some matters of detail for mutual adjustment if possible. It reminded the parties that the case was one calling for forbearance on both sides, and concluded with these words: "Great States have a temper superior to that of private litigants, and it is to be hoped that enough has been decided for patriotism, the fraternity of the Union, and mutual consideration to bring it to an end."

The Torrens System of Land Registration.—The object of this system is to provide a method whereby titles to land shall be settled and made practically unassailable and then shall be retained in that condition and capable of quick and easy use and manipulation. It takes its name from Sir Robert Richard Torrens, who introduced it in South Australia in 1858. It has spread over many of the British dependencies, to England and to a number of our states. The constitutionality of some of the provisions in the Torrens law of Illinois was sustained, in Mihalik v. Glos (247 Ill. 597, 93 N. E. 372, Dec. 21, 1910), the court holding that the Act did not violate Art. 6, Sec. 29, of the state constitution, requiring all laws relating to courts to be general and uniform, nor was it unconstitutional because it made abstracts of title thereunder receivable in evidence without the sanction of an oath.

A much more important decision is that of the Supreme Court of the United States in American Land Co. v. Zeiss (219 U. S. 47, 31 Sup. Ct. R. 200, Jan. 3, 1911), upholding the constitutionality of one of the Torrens laws of California. The case asserts the power of each state to enact a law of this character: that the well-being of every state requires that the title to land therein shall be secured and that there be convenient and certain methods of determining any unsettled questions respecting it, whether these questions may be raised by resident or non-resident owners, by known or unknown claimants. The court held that the statute in question provided adequate safeguards for the protection of non-residents and unknown claimants, and did not result in taking their property without due process of law.

This decision has operated to increase the zeal of the friends of the system and to arouse its opponents. At the meeting of the New York State Bar Association in Jan., 1911, it was made the basis of a report of the Special Committee on the Amendment of the Law in respect to the Registration of Titles, recommending various amendments to the New York Torrens Law which, in the Committee's opinion, would prevent its employment to defraud innocent owners of their property. On the other hand, these amendments were vigorously opposed by the advocates of the original law as devised to destroy or greatly impair its efficiency and usefulness. The topic was informally considered by the Commissioners on Uniform State Laws at their meeting in August, and was made the subject for a detailed report by the standing committee on the Torrens Law at the next Annual Meeting. In New Orleans an earnest effort is being made by business associations and lawyers to secure the enactment of a Torrens Law in Louisiana. Such a law was advocated a few years ago, by the commissioners on Uniform State Laws for Louisiana, but failed to command the support of the legislature.

Initiative, Referendum and Recall.—The Supreme Court of Oregon holds that, under the system now prevailing in that state, "it requires no more effort nor any greater care to amend a clause of the state constitution, than it does to enact, alter or repeal a statute. . . As a majority vote of the qualified electors by an exercise of the initiative power can enact a statute, they can, by giving such law an appropriate article and section, and entitling it an amendment to the constitution, make it a part of the fundamental law. Under this system, the organic law is no longer stable, but subject to sudden and serious changes, by provisions carelessly or unskilfully drawn" (State v. Schuler, 115 Pac. 1057, Ore., May 31, 1911).

A recall provision in a city charter, vesting the powers of government in the people and constituting all inhabitants of the city a body politic, has been held by the Supreme Court of Texas not violative of the United States constitution, Art. 4, Sec. 4, guaranteeing to every state a "republican form of government." That phrase, the court declared, quoting from Jefferson, "means a government by its citizens in mass acting directly and not personally, according to rules estab-

lished by the majority." Hence, "the policy of reserving to the people such powers as the recall, the initiative and the referendum is a function for the people themselves in framing the government, or for the legislature in the creation of municipal governments. It is not for the courts to decide that question. . . In fact the right of recall asserts in a larger degree the right of representation: that is, representation in fact of the will of the voters."

NON-CONSTITUTIONAL LAW

Monopolies and Restraint of Trade.—The most important deliverance upon this subject is that of the Supreme Court in the Standard Oil and Tobacco cases (221 U. S. 1 and 106, 31 Sup. Ct. R. 502 and 632, May 15 and May 29, 1911). The gist of those decisions is stated as follows in headnotes of the official reports:

> The terms "restraint of trade" and "attempts to monopolize" as used in the Anti-Trust Act, took their origin in the common law and were familiar in the law of this country prior to and at the time of the adoption of this Act. . . . The public policy of this country has been to prohibit, or treat as illegal, contracts, or acts entered into with intent to wrong the public and which unreasonably restrict competitive conditions, limit the right of individuals, restrain the free flow of commerce, or bring about public evils such as the enhancement of prices. The Anti-Trust Act of 1890 was enacted in the light of the then existing practical conception of the law against restraint of trade, and . . . it contemplated and required a standard of interpretation, and it was intended that the standard of reason which had been applied at the common law should be applied in determining whether particular acts were within its prohibitions.

Applying this doctrine to the facts of the cases, as the court understood them, it was held that both the Standard Oil Company and the Tobacco Trust had unlawfully restrained trade and monopolized at least part of the business in which each trust had engaged. The standard of interpretation announced in the opinion of the court, was vigorously criticised by Mr. Justice Harlan in a dissenting opinion, who contended that it "upset the long-settled interpretation of the Act" and operated as a judicial usurpation of the "constitutional functions of the legislative branch of the Government." Undoubtedly the language of the court is vague and the meaning of the statute remains uncertain. Counsel for other trusts do not find in the opinion of Chief Justice White definite and satisfactory criteria by which to test the legal guilt or innocence of their clients. Possibly by the time the suit against the Steel Trust (begun Oct. 26, 1911) has been finally determined by the Supreme Court, we may have lines so "pricked out by the gradual approach and contact of decisions on the opposing sides" that not only lawyers but laymen can know what business combinations are lawful and what are under the ban of the Anti-Trust Act.

"Anti-Trust Legislation and Litigation" was the subject of the Annual Address before the American Bar Association at its meeting last August, by William B. Hornblower, of New York. The paper contains a valuable historical sketch of the Sherman Act, and decisions which it has evoked, as well as a lucid exposition of the common law principles relating to restraint of trade and monopolies.

President Farrar, in his address before the same Bar Association, expressed the opinion that it was of no avail to break up the Standard Oil Company and the American Tobacco Company so long as the constituent elements have identical stockholders, a community of interests, and the legal power to establish substantial identity of directors among them. The remedy for existing evils is to be found, he believes, in such a change of the corporation laws of the several states as will drive out all corporations with fictitious or watered stocks, all corporations whose capital stock is so great as to constitute them practical monopolies or suspects of being such, all holding companies, and all companies whose stocks are owned and controlled by holding companies or by other corporations.

Among the cases in state courts enforcing state anti-trust laws are

the following: International Harvester Co. v. Comm. (144 Ky. 403, 138 S. W. 248, June 21, 1911); Home Telephone Co. v. Sarcoxie Light & Tel. Co. (139 S. W. 108, Mo., July 3, 1911), holding that the combination between connecting telephone lines for the purpose of competing with a third company did not violate the statute; the same doctrine is applied in Cumberland Tel. Co. v. State (54 So. 670, Miss., March 20, 1911); Starosk v. Pulitzer Pub. Co. (138 S. W. 36, Mo., June 1, 1911), a contract between a newspaper and its carriers that the latter will not act as carriers for rival papers is not under the statutory ban; State v. Racine Sattley Co. (134 S. W. 400, Tex. Civ. App., Jan. 25, 1911), holding that the law of that state prohibits restrictions on trade without regard to their immediate effect on trade; Folsum v. Lewis (208 Mass. 336, 94 N. E. 316, March 3, 1911), holding a strike by labor men to compel employers to employ none but union men is an unlawful attempt to obtain a monopoly of the labor market; State v. Standard Oil Co. (129 N. W. 336, Ia., Jan. 12, 1911), applying Code Sec. 5082b forbidding the sale of a commodity at a lower rate in one community than is charged in another for the purpose of destroying the business of a competitor in any locality and creating a monopoly.

United States Attorney General's Report for 1910, was published after Vol. I of the YEAR BOOK went to press. It is well calculated to sadden the most optimistic citizen. A very conservative newspaper characterized it as an appalling record of fraud and crime. It catalogues a long list of civil prosecutions under the Anti-Trust Law, some of the most important being those against the Standard Oil Trust, the Tobacco Trust, the Southern Pacific and Union Pacific combination, the Towing Monopoly, the Wholesale Grocers' Co., the Butter and Egg Board, the Bathtub Trust. Criminal prosecutions were conducted against the Paper Board Association, the Beef Packers, the Brick Trust, the Imperial Window Glass Co., as violators of the Anti-Trust Law, while many criminal prosecutions were brought against carriers for illegal discriminations and rebates under the Hepburn and Elkins Acts; and the criminal proceedings for violators of the revenue, bucket-shop and postal laws were legion. The Public Lands Division disclosed numerous attempts to secure unlawful inclosures of government land, as well as fraudulent patents and claims by railroad companies. An idea of the enormous bulk of litigation to which the federal government is a party is conveyed by the following statistics: During the fiscal year 1910, 3,464 civil cases were terminated, resulting in 1,866 judgments for the United States and 254 against them, the remainder being either dismissed or discontinued; while 4,048 were still pending. The criminal prosecutions terminated during the fiscal year were 15,371, resulting in 9,451 convictions, 1,495 acquittals, the balance being discontinued or quashed; and 9,222 were still pending. The total amount of fines, forfeitures and penalties imposed during the year were $1,083,974.67.

The Report for the year 1911 shows that the activity of the Department in discovering and prosecuting violators of federal laws has in no wise abated. Indeed, the Attorney General declared that "the period covered by this report was one of even greater activity in this department than the previous year." The total collections from suits and compromises, during the year, aggregate $4,204,115.51. Especial emphasis is laid upon the importance of the Standard Oil and Tobacco cases. The doctrine of those decisions, as understood by the department of justice, is stated at some length, and the plan approved by the Circuit Court for the disintegration of the Tobacco Trust is commended. At the same time the Attorney General expresses the opinion that "neither the Courts nor the Department of Justice is properly equipped to work out such problems save in exceptional cases." The importance of U. S. v. Kissell, 218 U. S. 601, dealing with the crime of conspiracy under the Sherman Act, and of the circuit court decision in the Powder Trust case, is explained. Proceed-

ings have been instituted, since the Report of 1910, against the Southern Wholesale Grocers' Association, the Electric Lamp Combination, the Lumber Trust, the Milk Trust, the Wall-Paper Combination, the Wire Pools, the Sugar Trust, the Trans-Atlantic Steamship Pool, the Magazine Trust, the Shoe-Machinery Trust, the combination of Coal Roads, the Kindling Wood Trust, a combination of Grain Elevators and the Steel Corporation. Forty-six prosecutions for illegal discriminations and rebates under the Hepburn Act and the Elkins Act have been instituted during the year. Frauds on the revenue continue, as do prosecutions therefor. The latter have resulted in 38 criminal convictions in the Southern District of New York, and in the collection of $2,120,000 in fines and penalties. Prosecutions under the White-Slave Traffic Act number 145, in which there have been 76 convictions, 14 acquittals, 10 discontinuances, while 45 cases are pending. There were 1,167 convictions for violations of the postal laws. Extensive frauds in connection with the last census were discovered and a number of indictments found therefor. The greatest frauds appear to have been practised at Tacoma, Wash., where about 35,000 fictitious names were entered on the census schedules. During the year 543 new civil cases and 117 new criminal prosecutions were begun concerning public lands. Unlawful deeds and leases in Indian allotments are still the subject of litigation. The Report concludes with a valuable résumé of the decisions of the Supreme Court, in which the government was a party or had an interest.

Criminal Libel.—The jurisdiction of the federal courts in certain cases of criminal libel has been determined in U. S. v. Press Publishing Co. (219 U. S. 1, 31 Sup. Ct. R. 212, Jan. 3, 1911). The facts of the case were stated briefly in the YEAR BOOK for 1910, p. 127. The decision of the lower court was affirmed, on the ground that "one accused of a crime consisting of several elements treated as a unit by the state law, so that there can be but one trial and conviction thereunder, cannot be indicted and tried in the United States court for a single element committed on a reservation of the United States within such state, the other elements of the crime being committed in other portions of the state."

Trade Marks and Unfair Trade.—The difference between a valid and legally registered trade-mark, which secures to its owner monopolistic right to its use, and a trade name which cannot be monopolized by its introducer, is brought out very clearly in Standard Patent Co. v. Trinidad Asphalt Co. (220 U. S. 446, 31 Sup. Ct. R. 456, April 10, 1911). Plaintiff had registered the word "Ruberoid" to designate a certain kind of roofing material. It had advertised this article for several years and built up an extensive and valuable trade in it. The defendant made and sold a roofing somewhat similar to the plaintiff's under the name "Rubbero." Plaintiff's contention was that the word "Ruberoid" was not descriptive, but suggestive merely, and hence a proper term for a valid monopolistic trade-mark. But the Circuit Court of Appeals (163 Fed. 977) and the Supreme Court held it was descriptive; that it was used to designate the roofing as being similar to rubber, and that it was none the less descriptive because misspelled. "Bad orthography," said the court, "has not yet become so rare or so easily detected as to make a word the arbitrary sign of something else than its conventional meaning." The next question was whether the defendant had been guilty of unfair trade in designating its roofing as "Rubbero." Had "Ruberoid" been a valid trade-mark, its monopolistic value would have been harmed by the defendant's use of "Rubbero"; but as its sole legal function was to point out the origin or ownership of the particular roofing, plaintiff was bound to show that defendant's use of "Rubbero" operated to palm off its roofing as that of plaintiff. This he failed to show, in the opinion of the court, as "the arrangement, color, design or general appearance of the wrappers and markings on defendant's packages were in such marked contrast to those of plaintiff's as to repel all suggestion of design on the part of the

former to misrepresent the origin or ownership of its product."

Another instructive case in the law of trade-marks is Baglin v. Cusenier Co. (221 U. S. 580, 31 Sup. Ct. R. 669, May 29, 1911). It holds that the word "Chartreuse" was exclusively appropriated by the Carthusian monks and the Monastery of La Grande Chartreuse to designate a liqueur made and sold by them for generations; that the liquidation in the French courts of the property of these monks did not invest the liquidator with the right to use such name of liqueurs not made according to the secret formula of the monks; that the monks had not abandoned their exclusive right to this trade-mark by using a different one, in connection with the manufacture of this peculiar liqueur in Spain; and that defendant should be enjoined from the use of the trade-mark and from any designation so similar to it as to draw to defendant's liqueur the reputation of that of the monks.

The Commissioner of Patents has decided that the word "Saniga" cannot be registered as a trade-mark, as it is a word in the Esperanto language meaning sanitary, and hence is descriptive, and is not an arbitrary combination of letters.

The Pure Food Act.—This statute has been shorn of much of its supposed efficiency by the construction put upon it in U. S. v. Johnson (221 U. S. 488, 31 Sup. Ct. R. 627, May 29, 1911), affirming 177 Fed. 313. The defendant was charged with delivering for shipment in interstate commerce certain packages and bottles of drugs alleged to have been misbranded in violation of the Pure Food and Drugs Act of 1906. The articles were labelled respectively "Cancerine Tablets," "Antiseptic Tablets," "Blood Purifier," "Special No. 4," "Cancerine No. 17," and "Cancerine No. 1"—the whole constituting what is termed in substance "Dr. Johnson's Mild Combination Treatment for Cancer." The indictment charged that each article was utterly worthless as defendant well knew. The indictment was quashed by the court below on the ground that the statute did not extend to false statements as to what drugs would do, but was limited to false statements as to what the ingredients are. Mr. Justice Hughes, with whom Justices Harlan and Day concurred, dissented. They insisted that the statute included all cases where the branding or labelling of an article contained false statements of fact "regarding such article, or the ingredients or substances contained therein." (This language is from Sec. 8 of the Act.) They agreed that the statute did not extend to matters of opinion concerning the curative qualities of the articles labelled; but that conviction should stand where it was shown that, apart from any question of opinion, the so-called remedy was absolutely worthless; that in cases where absolute worthlessness could be shown the label would be demonstrably false. (See also XXVIII, *Chemistry of Foods and Nutrition.*)

REFORM IN LEGAL PROCEDURE

Equity Practice in Federal Courts.—Agitation for reforms in legal procedure has continued throughout the year. A committee of the Supreme Court, consisting of the Chief Justice and Justices Lurton and Van Devanter, has undertaken the revision of the rules of practice in equity in the federal courts. It has issued a circular letter requesting assistance and suggestions from the members of the bar. President Farrar of the American Bar Association, referring to the foregoing facts and to the full power possessed by the Supreme Court to regulate the practice in equity, has remarked: "We may therefore live in the just expectation that the labors of this committee of distinguished judges, aided by the whole bar, will result in giving the country a system that will respond to the demand for reform in that important branch of legal procedure." On Oct. 23, 1911, a reform in the rules of this court to expedite cases was announced. A summary docket is provided for, on which will be

placed cases which the Court believe should be specially hastened. The appellee will move to affirm the decision of the lower court, and only a half-hour will be allowed each side for the argument of this motion. In the case of other motions, the time for argument has been shortened from an hour to three-quarters of an hour.

Delays and Costs in Litigation.—The Special Committee of the American Bar Association to suggest remedies and formulate proposed laws to prevent delay and unnecessary cost in litigation, secured the passage of a bill in the House of Representatives, though not in the Senate, providing that no judgment shall be set aside for technical and immaterial errors upon the trial. Similar legislation as to state courts has been enacted in Kansas, Illinois, and Wisconsin, and has been under consideration in Ohio and New York. In the last named state, committees of the State Bar Association and of the New York City Bar Association have conducted an active campaign for law reform with quite satisfactory results. They have secured the abolition of double trials in ejectment, the simplification of procedure for the trial of demurrers, and a variety of amendments to the code of civil procedure.

UNIFORM STATE LEGISLATION

The Commissioners on Uniform State Laws have not only secured the adoption in several states of acts which they have prepared, and which were referred to in the YEAR BOOK for 1910, but have done much work in the preparation of new statutes. The 21st national conference of this body, held in Boston last August, was attended by an unusual number of commissioners, and was characterized by most serious and thoughtful consideration and discussion of many subjects. The Uniform Negotiable Instruments Act is now law in 40 states, territories and possessions; the Uniform Warehouse Receipts Act, in 22; the Uniform Sales Act, in ten; the Uniform Bills of Lading Act, in seven; the Uniform Transfer of Stock Act, in five; the Uniform Family Desertion Act, in four; the Uniform Foreign Wills Act, in six; the Uniform Divorce Act, in three. Uniform laws were completed by the Conference and sent out to the state legislatures for adoption, on the following subjects: the Uniform Child Labor Law, and the Act relating to Marriage and Licenses to Marry. The proposed draft of a Uniform Corporation Law, and of a Uniform Workmen's Compensation Act were thoroughly discussed and considerable progress was made toward their completion. The draft of a Uniform Partnership Act was explained by its draftsmen and referred to the Committee on Commercial Law. A variety of other topics, including the Torrens System of Land Registration, received the careful attention of the Commission, which will bear fruit in the future.

The advisability of adopting a national commerce code by Congress was brought before the Committee on Commercial Law of the American Bar Association by a resolution of Joseph Wheless of St. Louis. The resolution asserted the plenary power of Congress to enact such a code, and recited the advantages to accrue therefrom. After a very careful and exhaustive discussion of the matter, the committee reached the conclusion that it was not wise to endorse the resolution, and asked to be discharged from its further consideration.

LEGAL EDUCATION AND ADMISSION TO THE BAR

The report of the Committee of the American Bar Association on this topic was presented to the Section on Legal Education at the Boston meeting in August last. It is a volumious document of 76 pages, containing a great deal of information and a great diversity of expert opinion upon a great variety of propositions. The trend of court rules and

of law-school curricula is towards lengthening the period of study, increasing the practical work required of the student, and making the examinations more searching and thorough. The report has been transmitted to the members of the American Bar Association, to members of the State Boards of Bar Examiners, to the Deans of all American law schools and others interested in the problems of legal education, with a request for further criticisms and suggestions.

CRIMINAL LAW

Oliver S. Rundell

Significant changes in criminal law occur principally by virtue of legislative action. Such action is, however, subject to constitutional limitations. Whether or not a given action is within given constitutional limitations is a judicial question. Hence a brief review of criminal law takes the form of answers to two questions: First, what have the legislatures within the past year declared to be crimes? Second, what have the courts said they may not declare to be crimes?

Game Laws.—The most prolific source of penal legislation within the past biennium was legislation with respect to protection of game. Hardly a legislature sat but made some new regulations with respect to closed seasons, game licenses, amount of game which may be taken, or the manner of taking it.

White Slave Traffic.—Next to the game laws the most fruitful subject of penal legislation has been the "white slave trade" and its attendant evils. California, Delaware, Florida, Massachusetts, Maryland, Michigan, Montana, Nebraska, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, and Vermont passed legislation making the procuring of a female to become an inmate of a house of prostitution a crime. California, Delaware, Indiana, Michigan, Montana, New Hampshire, Ohio, Pennsylvania, Utah, and West Virginia made unlawful the abuse of a situation of confidence or of legal responsibility in permitting or inducing a female to become an inmate of such a place. Maryland, Michigan, Montana, New York, Ohio, Pennsylvania, Utah, and Vermont declared it unlawful to hold a female in a house of ill-fame in order to compel payment of a real or pretended debt. California, Montana, New York, Pennsylvania, and Vermont forbade paying money to procure a female to enter a house of prostitution, and Maryland, California, New York, Ohio, Pennsylvania, Utah, and Vermont forbade the receiving of money for the same purpose; while Maryland, Massachusetts, Michigan, New York, Pennsylvania, Vermont, and Wisconsin made the receipt of money or goods without consideration from a prostitute unlawful. Maryland, Michigan, Ohio, Oregon, Pennsylvania, and Utah made illegal the transportation of females through or across the state for purposes of prostitution unlawful, while New York and Vermont expressly forbade the importation or exportation, into or out of the state, of females for immoral purposes. With the exceptions of Nebraska, North Carolina, and West Virginia, the offenses above enumerated were made felonies, some statutes permitting a maximum penalty of 20 years. Many of the statutes provide that the marriage of the one accused of a violation of the statute with the female concerned shall not prevent her from being a competent witness with respect to the transaction in question.

Desertion.—Wife and child desertion received some attention at the hands of the various legislatures. Colorado declared the failure, without cause, of a husband or father to support his wife or children, a felony. Kansas, South Carolina, and Utah made it a misdemeanor for a husband to fail, without cause, to support his wife; while Minnesota made combined wife and child desertion a felony. Missouri and South Carolina made it a misdemeanor for

a man to fail to provide for his child. Kansas, Minnesota, Utah, and Virginia made either parent liable. Rhode Island made it a misdemeanor for any person having the care and custody of a child under 17 wholly to abandon it, and Maryland provided that it should be a misdemeanor for any one having the care and custody of a child under three years to abandon it with the intent that it should become a public charge. Georgia raised the imprisonment penalty for bigamy from four to ten years.

Liquor Traffic.—As usual many laws were passed regulating the liquor traffic. Utah and Virginia enacted complete codes governing the subject. Laws prohibiting drinking of intoxicating liquor upon passenger trains, except in dining cars, were passed by Illinois, Kentucky, North Dakota, New Hampshire, Oregon, Virginia, and Wisconsin. Mississippi made no exception in favor of the dining car. Nevada and Utah prohibited the sale of liquor within five miles of a construction camp; and Oregon within six miles of government works. Texas prohibited the gift or sale of spirituous, vinous or malt liquors in houses of prostitution. (See XV, *The Liquor Traffic.*)

Cigarettes, Opium, and Gambling.—Virginia forbade the use of opium in the manufacture of cigarettes; Ohio the sale or gift of cigarettes to persons under eighteen; and Utah and Washington the sale or gift of tobacco in any form to minors. Indiana, Montana, Ohio, and Utah passed laws making illegal the sale of opium or its derivatives, except upon a physician's prescription which had not previously been filled. Missouri made it a misdemeanor to establish or frequent any place for the smoking of opium or other drugs. New York amended her gambling laws so as to make pool-selling or book-making, with or without writing, unlawful. Georgia made it a misdemeanor to bet on any election. Louisiana made gambling an offense within a radius of three or five miles of 20 public schools. Laws penalizing the sale of adulterated and certain kinds of unbranded food stuffs were passed by many states. Illinois passed an act forbidding the use of a common drinking cup in schools, hotels, theaters and on trains. New Hampshire authorized the state board of health to make a similar regulation.

Murder, Rape, and Kidnapping.—Vermont changed the punishment for murder in the first degree from "death" to "death or imprisonment for life" as the jury may determine, and for murder in the second degree from "life imprisonment" to "life imprisonment or a term of years to be fixed by the court pronouncing sentence." Minnesota abolished the death penalty for murder in the first degree. Delaware changed the punishment for rape from "death" to "death or at the discretion of the court upon a recommendation of mercy by the jury, life imprisonment." Maryland changed her law with respect to kidnapping so as to include children between the age of twelve and sixteen, while Louisiana made kidnapping an offense punishable by death. Georgia declared it unlawful to shoot at occupied dwelling houses.

Theft.—Louisiana increased the penalty for cattle stealing. Oklahoma did the same with respect to cattle, dogs, and horses. New York made it a felony to steal or fraudulently destroy, mutilate, or conceal a will. Utah increased the penalty for robbery. Kansas and Wisconsin passed acts defining and prescribing the punishment for burglary with explosives. Maryland made the embezzlement by an insurance agent of money received by him as such agent a misdemeanor, punishable by imprisonment for not more than three years. Massachusetts provided that procuring the making of a note or the release of an obligation by a false pretense with intent to defraud should constitute larceny. Georgia and Indiana passed laws punishing the fraudulent obtaining of hotel accommodations. Kentucky made it unlawful to buy or attempt to buy farm products which had been "pooled." Colorado passed a law making unlawful any attempt on the part of an employer to discriminate in favor of non-union employees.

Firearms and Explosives.—Massachusetts, Michigan, and Montana for-

bade the sale of blank cartridges or toy pistols in which they might be used. California and Oregon each made it a misdemeanor to transport dynamite or other explosives on a passenger train between points within the state. Washington made it unlawful for one who is not and has not declared his intention to become a citizen of the United States to carry or possess a firearm without license. Michigan declared it illegal to carry concealed weapons in counties of more than 150,000 population, while Montana passed a similar law with respect to carrying concealed weapons in towns or cities. New York passed a drastic law prohibiting the carrying of dangerous weapons in New York City.

Kansas passed a law regulating the use of artesian wells and making it a misdemeanor to waste the water of such wells. Michigan passed a law declaring a closed season for beaver, Vermont did the same for beaver and otter.

Oklahoma and Virginia forbade the sale of adulterated or misbranded stock-food. Kansas and Oklahoma made it a misdemeanor to move domestic animals in violation of a quarantine regulation. Texas forbade the importation of sheep affected with scab.

Corrupt Practices.—Utah declared it unlawful to pay money or promise office or employment in order to secure votes or political support or aid. Washington made it a gross misdemeanor to vote twice at an election and a felony to vote when knowingly unqualified. Kansas forbade the purchase of newspaper support and the printing of political advertising in a newspaper unless plainly marked "advertising" and signed by some responsible person. Indiana and Ohio passed corrupt-practice acts defining and punishing corrupt practices in election. Texas made the act of an officer who makes a false return in an election upon a constitutional amendment a felony. (See VIII, *Popular Government and Current Politics.*)

The Defense of Insanity.—Within the past year two penal statutes, both of marked significance, passed by the legislatures of different states have been declared unconstitutional; one because it was held to violate the state constitution; the other because found by the court to be in violation of the constitution of the United States. One was an act passed by the legislature of the state of Washington, obviously for the purpose of minimizing the evil incident to the defense of insanity in criminal cases. The statute declared that inability by reason of insanity, idiocy, or imbecility to understand the nature or wrong of an act committed should be no defense to a charge of crime based upon such act. Also, upon the trial no evidence of insanity, idiocy, or imbecility might be given, but if upon conviction the presiding judge should be satisfied the defendant was insane when the act was committed or at the time of the trial he might send the convict to an insane asylum until cured. The statute was held unconstitutional by a majority of the Supreme Court of the state. Not all of the judges forming the majority agreed that it was the intent of the statute to abolish the defense of insanity, part basing their opinions on the ground that no adequate trial on the issue presented by such defense was given by the statute. Part of the court held that the statute attempted to abolish the defense of insanity, and a majority agreed that if it did it would be unconstitutional on that ground. The specific provisions of the constitution relied upon to sustain this view were the provisions providing for due process of law and the preservation of trial by jury. These provisions are found in nearly, if not quite all, of the constitutions in the country. Hence if the view of the Washington court is correct, our constitutions do not permit of convicting an insane man of crime.

Contracts of Service.—The other unconstitutional statute was a statute of the state of Alabama, which, as amended, provided in effect, that one, who with intent to defraud entered into a written contract of service and thereby secured from his employer money or goods, and afterwards with the same intent, and without just cause, and without refunding the money or paying for the property,

refused to perform the service, should be punished by a fine equal to twice the damage suffered by the injured party. It was moreover provided that the refusal to perform the service without refunding the money or paying for the property should be *prima facie* evidence of such fraudulent intent. Besides this statute, a rule of evidence enforced by the Alabama courts prevents the accused under such a statute from testifying on the trial, "as to his uncommunicated motives, purpose, or intention." One Bailey was convicted under the statute, fined $30, and in default of payment sentenced to prison. The Supreme Court of Alabama sustained the conviction and a writ of error was taken to the United States Supreme Court. Though the evidence showed that Bailey was a negro there was no evidence before the court to show that that fact had any bearing on the case. Hence, the question of racial discrimination did not arise, the court saying that the statute might be viewed "in the same manner as if it had been enacted in New York or in Idaho." This left two questions to be considered (1) does the statute in connection with the rule of evidence described make a breach of a contract of personal service a crime; (2) if so, is it in violation of the constitution and statutes of the United States? It may be seen that, while the statute purports to punish the fraudulent acquisition of money or property, it may be very difficult, if not impossible, for one who has secured money or property by virtue of a contract which he has broken to prove that his intention was not fraudulent. In fact, it would be so difficult in the ordinary case that the court held that the statute, in effect, made the mere breach of the contract a crime. As to the second question: the Thirteenth Amendment prohibits involuntary servitude and provides that Congress may enforce this prohibition by appropriate legislation. Under this provision Congress has passed a statute prohibiting peonage. This statute has been held to be constitutional. Under it peonage has been defined as a condition of compulsory service based upon indebtedness, it being immaterial that the service was originally undertaken voluntarily. Does a statute making it a crime to break a contract of service compel service? The court said that if the statute had directed the state constabulary to assist the employer in compelling his servants to remain in his service it would in its effect be compelling service; and that it was none the less compelling service because it authorized imprisonment at hard labor in a state penitentiary instead. Hence the Supreme Court declared that the state could not punish, by imprisonment, a man merely because he has broken his contract to work for another.

VIII. POPULAR GOVERNMENT AND CURRENT POLITICS

ARTHUR N. HOLCOMBE

PROGRESS OF POPULAR GOVERNMENT

The progress of popular government during the year 1911 may be summarized as follows. In the field of federal politics, the reform of procedure in the House of Representatives has been completed by the transfer from the speaker to the caucus of the majority party of the right to select the committee on rules and to hold it to a continuous responsibility for the exercise of its great powers. Congress failed to submit a constitutional amendment for the direct election of United States senators, but the "Oregon plan" was adopted in seven states, making the total number of Oregon-plan states now ten. The initiative and referendum were adopted in two states, making the total number of direct-legislation states now 12, and provision for the submission of direct-legislation constitutional amendments to the people in 1912 was made in seven other states. The recall upon the Oregon plan was adopted in one state, and was adopted in one other state with the exclusion of procedure for the recall of judges. Recall constitutional amendments upon the Oregon plan will be submitted in 1912 to the people of one state, and, excluding the recall of the judiciary, in three other states. The mandatory state-wide direct primary was established in four states, and older direct-primary laws in several other states were improved and extended. The system of direct nomination of candidates for all elective state offices now exists in two-thirds of the states, and has been established for the nomination of locally elected state officers in several others. The presidential-preference primary, first introduced in Oregon in 1910, has been established in four other states, with more doubtless to be added before the holding of the national conventions in June, 1912. Campaign publicity and limitation of political expenditures legislation has been enacted by the United States, and by ten of the states. More than three-fourths of the states now have such measures upon their statute books. Woman suffrage has been adopted in one state, making the total number of woman-suffrage states now six, and the legislatures of four other states have provided for the submission of woman-suffrage amendments to the people in 1912. These various phases of the progress of popular government are discussed in detail in the following pages. The most important contribution to the literature of popular government and current politics during the year is Richard S. Childs' *Short Ballot Principles.*

REFORM OF THE RULES OF CONGRESS

Election of Standing Committees.—The removal of the speaker from the committee on rules and the reorganization of the latter upon a basis of more effective party responsibility were described in the article on popular government in the AMERICAN YEAR BOOK for 1910 (pp. 138-140). The notable event of the past year in the development of the rules of procedure in Congress was the vesting of the power of electing

all standing committees in the House itself. Previously, all committees had been appointed by the speaker, but the election of the reorganized committee on rules in March, 1910, by the House foreshadowed the election of all standing committees in a similar manner, when the next new House should meet. The sixty-second Congress met in extra session on April 4, 1911, and the new rules reported from the Democratic committee on rules contained the expected amendment. Indeed, the Democratic members of the sixty-second Congress had already met in caucus in the preceding January, selected the Democratic members of the new committee on ways and means, and committed to the latter the task of nominating the Democratic members of the committee on rules and of all other standing committees. The official slate, thus authorized, was duly prepared and, upon submission to the Democratic caucus at its next meeting in April, confirmed. The minority (Republican) members of the standing committees were designated on resolution of the Republican caucus, by the Republican floor leader. The members of the committees of Congress, as thus nominated by the Democratic caucus and designated by the Republican floor leader, were promptly elected by the House of Representatives itself.

Power of the Party Caucus.—The rules of the sixty-second Congress consummate a profound change in the organization and activity of parties in Congress. Party leadership is taken from the speaker and divided between the chairmen of the committees on rules and on ways and means. Both of these gentlemen are held continuously responsible to the party caucus. The caucus of the majority party thus becomes the real source of all legislation on the issues of the day. More than ever before, the responsibility for the fulfillment of party pledges, so far as lies within the power of the House of Representatives, is now lodged where those who hold the power can be held to effective accountability. The congressional caucus is now the main-spring of party action.

DIRECT ELECTION OF UNITED STATES SENATORS

The Borah Resolution.—The popular demand for the direct election of United States senators was frustrated by the artifices of the senators themselves. A joint resolution to provide for the submission of an appropriate constitutional amendment to the states was twice passed by the House, and twice amended by the Senate in such a way as to prevent its adoption by the necessary two-thirds vote in both houses of Congress. The original Borah resolution provided for the election of senators by the people of the states, and further provided that the times, places, and manner of holding elections for senators should be as prescribed in each state by the legislature thereof. Under the constitution in its present form, the times, places, and manner of holding elections for senator are prescribed by the states, but Congress may alter such state regulations, or make regulations of its own, except as to the places of holding senatorial elections. The purpose of these constitutional provisions was to ensure to the federal government the power to control the election of its own officers. The single limitation to this power of federal control originated in the obvious propriety of protecting the state legislatures in their liberty to meet wheresoever they might choose within the limit of their several states. The Borah joint resolution to provide for the election of United States senators by the people would have had the effect, if adopted and ratified, of depriving the federal government of all power to regulate such elections, notwithstanding that the federal government possesses full power to regulate congressional elections. Professedly in order to retain for the federal government the same control over the election of senators as it has always exercised over the election of congressmen, the Sutherland amendment was intro-

duced. This amendment simply proposed to omit that part of the Borah joint resolution transferring to the states the full power to regulate the times and manner of electing senators.

Effect of Sutherland Amendment.—The constitutional effect of this omission would have been to leave the question of the control of the elections of senators *in statu quo*, but the political effect was to alienate all those Southern senators who were ready to support the Borah joint resolution. The Southern states already possess what is substantially the popular election of senators through the instrumentality of the direct primary as operated by the Democratic party. It is a mode of popular election which was devised for the purpose of eliminating the negro vote, and which may be described more accurately as election by Democrats only. The Southern senators were unwilling to sanction any change in the constitution, even one so generally approved by them as the direct election of senators by the people, that threatened to increase the likelihood of federal interference in the conduct of elections in the South, or to endanger white supremacy in politics. The Southern senators feared the renewal of attempts on the part of the federal government to solve the problem of negro suffrage, and were resolved to reserve that problem, so far as might be, for the South alone. Popular election of senators under unlimited state control, they were anxious to secure, but popular election under unlimited federal control they declined to accept. Northern senators who supported the Sutherland amendment were aware of this attitude on the part of the South. Some of them, doubtless, welcomed it as a convenient means of evading a direct contest on the sole issue of popular election. At all events, the Sutherland amendment was adopted Feb. 24, by a majority of 50 to 37. The amended joint resolution then failed to pass by the necessary two-thirds, Feb. 28, by a vote of 54 to 33. The Borah joint resolution was again introduced into the special session of the sixty-second Congress. It passed the House April 13, but was again altered by the adoption of the Sutherland amendment in the Senate. It passed the latter body in its amended form by a two-thirds vote June 12, and the resulting disagreement between the two houses prevented the submission to the states of any provision for the popular election of United States senators.

The Oregon Plan.—The failure of Congress to act upon the popular demand for the submission of a constitutional amendment to provide for the direct election of senators was not allowed by the states to prevent altogether the adoption of more direct methods for the election of senators. During the course of the year, at least 15 legislatures memorialized Congress on behalf of direct elections, and seven states, California, Kansas, Minnesota, Montana, New Jersey, Ohio and Wisconsin, adopted the Oregon plan of pledging candidates for the legislature without regard to party affiliation, to vote for the people's choice for United States senators, as indicated at the general election. In one other state, Iowa, the Oregon plan was adopted by the legislature, but vetoed by the governor. In another, South Dakota, the plan was rejected by the legislature, but submitted to the people by initiative petition to be voted on at the general election in 1912. Altogether, there are now ten states in which the people actually have the power to elect their United States senators without anything more than a perfunctory intervention on the part of the legislature. (See *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1910, p. 140.) The popular demand for the wider adoption of the Oregon system of selecting United States senators was emphasized by the deadlocks over the election of a senator in the two Western states, still without the state-wide direct primary, in which new senators were to be elected by the legislatures in 1911, Colorado and Montana. The wearisome exhibition in these states of the inefficiency of the method of electing senators by uninstructed legislatures furnished pointed illustrations for the arguments in favor of some system of popular senatorial elections.

DIRECT LEGISLATION

Initiative and Referendum. — The most striking feature of the progress of popular government in the states during 1911 has been the advance of the initiative and referendum. At the beginning of the year the procedure for direct legislation by the people existed in some form in ten states. During the course of the year, the new state of Arizona was admitted with the initiative and referendum, and a constitutional amendment to establish the same was adopted in California, making the total number of direct legislation states now 12. During the year, the appropriate steps for the submission of constitutional amendments in 1912 were taken in seven other states, Florida, Wisconsin, Idaho, Nebraska, North Dakota, Washington and Wyoming. In another state, Indiana, a new constitution containing the initiative and referendum was drafted to be submitted to the voters. Also in 1912, the state of Nevada, which has possessed the referendum since 1905, is to vote on the initiative. The rapidity with which the adoption of procedure for direct legislation by the people seems likely to spread over the country makes timely a discussion more in detail of the features of various initiative and referendum amendments.

Procedure.—The vital elements in the procedure for direct legislation by the people are four in number: (1) its scope; (2) the majority required for enactment by popular vote; (3) the size of the petitions required for the submission of measures to the people; and (4) the means adopted for acquainting the voters with the measures to be submitted.

Scope.—The process of direct legislation may extend to the adoption of constitutional amendments as well as to the enactment of ordinary legislation, or it may be restricted to the latter alone. The effect of extending the initiative and referendum to constitutional amendments is to simplify the procedure for the amendment of the constitution. It does not wipe out the distinction, as is sometimes asserted, between constitutional and statutory law, but it does in many cases make the process of altering the fundamental law as easy as that of adopting a statute which the legislature has refused to adopt. Of the ten states which had adopted direct legislative procedure up to the beginning of 1910, five adopted it both for statutory enactments and for constitutional amendments, namely, Oregon (1902), Oklahoma (1907), Missouri (1908), Arkansas and Colorado (1910), and one, Nevada, which in 1905 adopted the referendum only, has voted to submit the constitutional and statutory initiative in 1912. South Dakota (1898), Utah (1900), Montana (1906), and Maine (1908), have no effective procedure for constitutional amendment by direct action of the people. Both the new direct-legislation states, Arizona and California, apply the procedure to constitutional amendments as well as to statutory legislation. Of the seven states which have provided for the submission in 1912 of a constitutional amendment to establish the initiative and referendum, Washington and Idaho restrict it to statutory legislation; while four, Nebraska, North Dakota, Wisconsin, and Wyoming, extend it to constitutional amendments.

Majority Required for Enactment. —The majority required for the adoption of a measure submitted or referred to the people may be either a majority of all votes cast at the election at which the measure is submitted or referred, or it may be a majority of the votes cast for or against the particular measure. As a rule, between 10 and 30 per cent. of the voters who go to the polls vote upon candidates only, the popular interest in measures never being as great as in candidates. Hence, the requirement of an absolute majority of all votes cast at an election is equivalent to the requirement of a five-ninths to five-sevenths majority of the votes actually cast upon a measure. The effect is to render more difficult the enactment of legislation by the people. This effect is

clearly indicated by the results in Oklahoma, where such a requirement is made for the enactment of measures submitted to popular vote. Every one of the 11 measures submitted since the adoption of the Oklahoma constitution in 1907 has been defeated, although five of these measures were approved by a majority of those voting thereon, one of them by a vote of more than two to one. Those attending the election who did not vote upon measures were, in effect, counted in the negative, a procedure which is no more rational than to count the votes of those who did not go to the polls at all. Both alike may fairly be assumed to be willing to abide by the decision of those who are sufficiently interested in a measure to vote thereon. The requirement of a majority of all votes cast at the election for the adoption of a measure submitted to the people has the further consequence, perhaps unforeseen by those responsible for it, that any act of the legislature can be almost certainly defeated by a dissatisfied minority of the people large enough to file a referendum petition. Of the states which provided in 1911 for the submission of a constitutional amendment to establish the initiative and referendum, Wyoming alone requires a majority of all votes cast at the election for the adoption of a measure, the others being content with a majority of the votes cast thereon.

Size of Petition.—The size of the petition required for the submission of measures to the people varies from 5 to 25 per cent. of the qualified voters of the state. The requirement of a 25 per cent. petition is found in the Wyoming amendment, and is obviously intended to permit direct legislation by the people only in case of great emergency. Such a high percentage cannot be regarded as appropriate for a normal utilization of the direct legislative process. The Wyoming amendment further requires that all signatures be secured in the presence of three witnesses, which practically means that canvassers for signatures must work in groups of three, an unnecessary source of additional expense. The other states providing in 1911 for the submission of amendments conform to the normal practice of requiring upon petitions the valid signatures of 8 or 10 per cent. of the qualified voters. Several of the states provide further safeguards against the abuse of the initiative and referendum in the shape of requirements relating to the geographical distribution of signers. Thus, the Nebraska amendment provides that to make a petition effective it must be signed by five per cent. of the qualified voters in each of at least two-fifths of the counties of the state. A reasonable requirement for the distribution of petitioners is doubtless desirable to prevent the submission of measures of purely local interest, but such requirements may easily be made a means of encumbering the procedure for direct legislation without any corresponding advantage to the people.

Publicity Pamphlets.—The means adopted in Oregon, the state in which the process of direct legislation has been most freely used, for acquainting the people with the measures to be submitted to them is the publicity pamphlet. The text of each measure to be submitted to the people is printed in full, together with an argument in favor of each measure prepared by its proponents, and arguments against measures prepared by any citizens who may wish to oppose them. A copy of the pamphlet is mailed to every voter in the state in advance of the election, together with a description of the short titles to be used for the several measures on the official ballot. The Oregon publicity pamphlet has been freely employed by the advocates and opponents of measures, and its distribution has effectively contributed to the education of the people. The publicity pamphlet is also provided for in Oklahoma, but its distribution has been managed with indifferent success. In 1911, the legislature of South Dakota authorized the publication of a publicity pamphlet hereafter in that state, and the constitutional amendments submitted by the legislatures of several other states either authorize subsequent legislatures to make appro-

priate provision for the information of the voters, or themselves contain provision for the publication of the text of measures together with arguments, as is done in the amendment adopted in 1911 in California. The pamphlet distributed to California voters prior to the special election in Oct., 1911, was however a model of how not to print a publicity pamphlet. It consisted of two unbound sheets, closely printed on both sides in columns of fine print, one sheet measuring 9½ by 12½ in., the other 25 by 38 in. Anything more inconvenient for perusal by the voters could scarcely be devised.

Emergency and Competing Measures.—There are certain other elements in the procedure for direct legislation for which better provision is made in some states than in others. One is the procedure with regard to emergency measures. Some provision must be made for prompt legislative action in cases of emergency. Direct legislation by the people, however, is ineffective, unless the people can temporarily postpone the enforcement of measures until after the will of the people has been ascertained. The early procedure was to permit the legislature to declare a measure an emergency measure, and put it into effect at once. Since this declaration was made by majority vote, and could be incorporated in the preamble of the bill itself, the effect was to enable the legislature to put any measure, however objectionable to the people, into immediate operation. It is provided, therefore, in several of the more recent amendments, (see, for example, the proposed Wisconsin amendment), that no measure shall be declared an emergency measure except by a separate vote, taken in advance of that upon the measure itself, and carried by a two-thirds majority in each house. Such a provision is a proper safeguard for the people, and should be inserted in every direct-legislation amendment. Another question arises in the case of the submission of two or more conflicting measures on the same subject. Such competing measures might conceivably all be enacted by the people, and the question would arise, which should be enforced by the executive of the state. Clearly the executive should have no discretionary authority in such a case, for such authority would amount to a veto power over legislation by the people. No state would deliberately surrender to the governor the veto power over statutes or constitutional amendments enacted by the people. Hence, several of the more recent amendments provide that in case of the adoption of competing measures by the people, that measure shall be enforced in its entirety which receives the greatest affirmative vote, and competing measures shall be disregarded in so far as they conflict with it. To provide that any part of a measure duly enacted by the people shall be disregarded seems anomalous, but in fact it is in harmony with the spirit of American government. It is merely another illustration of the principle by which courts refuse to enforce statutes conflicting with the fundamental law as expressed in the state or federal constitution. In the present case, the people themselves lay down the rule by which the more fundamental of the conflicting laws shall be determined.

Amendments to Initiated Measures.—A more serious problem in the procedure for direct legislation by the people lies in the difficulty of amending measures initiated by popular petition. Ordinarily, the people must accept a measure as drafted by some self-constituted initiative committee, or wait two years until a more satisfactory measure can be agreed upon by the proponents of the measure and resubmitted. One solution of the problem is to authorize the legislature to submit a competing measure, containing such amendments to the measure initiated by popular petition as may appear desirable. The objection to this procedure is that it puts the original proponents of legislation at a disadvantage. Having secured the necessary signatures to initiate a certain measure, they are unable to alter it, or in any way to profit by subsequent popular or legislative discussion of their measure. Opponents of the measure, however, if in con-

trol of the legislature (as they presumably are, or it would not have been necessary to initiate the measure by popular petition in the first instance), may submit a substitute, cleverly drafted for the purpose of frustrating the designs of the original proponents of legislation. Having the advantage of the last word, the legislative politicians are not unlikely to succeed in discrediting the handiwork of the unofficial initiators of measures.

The Wisconsin Plan.—The Wisconsin initiative and referendum amendment seeks to overcome this defect in the ordinary proceedure for direct legislation by an original device. It omits the usual provision for the direct submission of measures by popular initiative petition. On the contrary, it expressly provides that no measure shall be submitted to the people, unless it has first been submitted to the legislature. A measure, however, may be submitted to the legislature by any citizen who can find a single legislator to introduce it. No measure would be likely to find favor with the people which could not at least secure an introduction to the legislature. Hence, the necessity for initiative petitions is removed. Once a measure has been submitted to the legislature, it may then be referred to the people by a referendum petition, in its original or in any amended form, whether favorably acted upon by the legislature or not. The effect is to secure to the people every advantage possessed by the initiative and referendum through the use of the referendum alone, together with the important additional advantage that the proponents of legislation are not irrevocably committed to their measure in its original form, but may profit by all subsequent popular and legislative discussion, and finally secure the reference of their measure to the people in its most perfect form. If the opposition in the legislature desires to submit a competing measure, it must do so through the same means as the proponents of the measure, that is, by a popular referendum petition secured within 90 days after adjournment. The legislature may not submit a competing measure upon its own motion. The Wisconsin procedure for direct legislation possesses all the merit that can be found in the more usual procedure, and also the additional merit of placing the proponents of legislation to be referred to the people upon an equality with their opponents, and of securing the utmost deliberation during the initial stages of enactment.

The Illinois Situation.—The character of the controversy over the adoption of the initiative and referendum in other states is well illustrated by the events in the state of Illinois. In that state, there is provision for a public-opinion ballot or popular advisory vote at each general election upon public questions for the better information and guidance of the representatives of the people chosen at the same time to the state legislature. In 1910, one of the questions submitted to the people was a proposition instructing the legislature to submit an initiative and referendum amendment to the state constitution at the next general election, that is, in 1912. This proposition was endorsed by a majority of the voters voting thereon in every senatorial district in the state, and carried the state as a whole by a vote of more than three to one (447,908 to 128,398). The initiative and referendum were also promised in both the Republican and Democratic party platforms, and in addition a majority of the members of the newly chosen legislature had given their personal pledge to be guided by the results of the public-opinion ballot. The initiative and referendum had also been endorsed by the state grange, the state federation of labor, and numerous other state organizations. Under these circumstances an initiative and referendum amendment was introduced into the senate, and passed the senate unanimously. In the house, however, although passed by a large majority, it failed to secure the two-thirds vote required for submission to the people. The same result occurred in several other states where the popular demand was apparently as overwhelming as in Illinois, notably in Minnesota and Kansas.

THE RECALL

By the recall is meant legal provision for the retirement of an elected officer before the expiry of his term of office, if he has forfeited the confidence of the voters. It is less drastic than impeachment, and is intended to be applied primarily to legislative, rather than executive and judicial, officers. It has been introduced into a number of American cities, and was introduced into Oregon to apply to state officials in 1908. (See *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1911, pp. 151, 152.)

The Arizona Constitution.—The recall, as applied to state officers, secured a most extensive publicity during the past year through the action of the constitutional convention held in 1910 in the incipient state of Arizona. (See also XII, *New Mexico and Arizona.*) The constitution drafted by this convention and subsequently accepted by the people of Arizona, contained, among other popular features, the state-wide recall. The Arizona recall was fashioned after that adopted in Oregon in 1908, and included the judiciary. Congress was reluctant to admit a state with such an innovation in its constitution. It was urged that the issues involved in the recall of judges were not suitable for determination by the people, that the people could not be trusted to use such a power prudently, and that the result would be to drag the judges into the most undesirable politics, to deprive them of their independence, and to debase their character. On the other side, it was replied that the people who chose their servants should have the power to dismiss them, and that the judiciary were intended to be the servants of the people like other public officers. Moreover, even if the experiment were a doubtful one, a state should have the right to determine for itself the details of its frame of government, provided it adhered to the republican form. Finally, it was pointed out that opposition by Congress to the recall of judges was futile, since the state once admitted to the Union, could extend the recall to the judiciary whenever it should see fit. Nevertheless, President Taft vetoed the statehood bill providing for the recall of judges, and the state was finally admitted without it. It retained, however, the recall of executive and legislative officers as in Oregon. The states of Washington, Idaho and Wisconsin provided for the submission of the recall without application to judges in 1912, and the proposed new constitution for Indiana to be voted on in 1912 also contains provision for the recall of executive and legislative officers. Nevada took the appropriate steps for the submission in 1912 of a recall amendment, including the recall of judges, and California submitted such an amendment at a special election held October 10, 1911. The California recall amendment was adopted by an overwhelming majority.

Local Recall.—The local recall has been widely adopted during the year in connection with the spread of the commission form of city government, and has been put to some use. (See XI, *Municipal Government.*) The number of petitioners required to order a municipal recall election is usually 25 per cent. of the number of those voted for all candidates for the office in question at the last preceding election. This number is high enough to make recall proceedings impracticable except in cases of grave necessity. The California amendment provides that for ordering a recall election upon an officer elected by the state at large, a 12 per cent. petition shall be required, and for ordering a recall election upon a state officer elected in any minor division of the state a 20 per cent. petition shall be required. If the officer sought to be removed was elected in the state at large, the recall petition must be circulated in at least five counties of the state and must be signed in each of such counties by voters equal in number to at least one per cent. of the entire vote cast in such counties at the last election. The California amendment is intended to be self-executing, and provides in detail for all anticipated contingencies in the exercise by the people of the power of recall.

DIRECT PRIMARIES

New York.—During the year 1911 the direct primary as a more popular mode of nominating candidates for public office continued to make progress. Mandatory direct primary laws applying to all state and county offices were passed in Maine, Massachusetts, New Jersey and Wyoming, and a law applying to all candidates except those voted for by the state at large was passed in New York. New York had been the scene of a prolonged and unusually bitter struggle for a state-wide direct-primary law, inaugurated by Governor Hughes in 1909. (See *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1910, pp. 147, 148.) Governor Hughes had supported a radical direct-primary law containing several original features, but was unable to secure its adoption by his own party. The Democratic platform in 1910 contained a pledge to establish the direct primary, but a Democratic legislature failed to redeem the pledge during the regular session. Governor Dix called a special session, as Governor Hughes had done a year earlier, and by granting greater concessions to the opposition within the party than Governor Hughes had been willing to do, secured the enactment of a law in Oct., 1911. This law leaves the state convention intact, with power to nominate the state ticket, but establishes the direct primary in the congressional, judicial, state senatorial and assembly districts, and for county and city officers, and for district party committees. Only enrolled party voters can participate in the New York direct primary. The two political machines reserved for themselves some of the peculiar powers originally proposed in the Hinman-Green (Hughes) bill, without granting to the rank and file of the parties the corresponding privileges which Governor Hughes had planned as an offset. For example, the organization's slate of candidates is entitled to use the official party emblem on the primary ballot, and no ticket may be formed to run against the organization unless it is endorsed by five per cent. of the enrolled party members of the district. Only five days are available for circulating anti-machine nomination papers and completing the required petitions, and coöperation between independent groups within the party is rendered difficult by the provision that no names may appear more than once upon the primary ballot. These devices will tend to entrench the machine more firmly in power than ever, and discourage independent movements within the party ranks, especially, as the special privileges reserved for the party machines in respect to the nomination of candidates apply also to the election of district committeemen, that is to say, of the machines themselves. Indeed when no candidate for state committeeman in any district receives a majority vote, choice will be made as at present by the delegates to the state convention. The original provisions in the Hinman-Green (Hughes) bill for the election of party committees and the designation of official party tickets were omitted. The New York law cannot prove satisfactory to any sincere advocate of the direct primary, not only because it is inadequate in scope, but also because it is vicious in principle.

New Jersey.—In New Jersey, the law of 1911 rounded out and completed the system of direct primaries for legislative candidates established in 1908. The new law applies to all elective offices, local, state and federal, including United States senator. The law of 1908 had provided for an optional advisory vote on candidates for United States senatorial nominations. The retiring Republican senator refused to submit his name to the primary in 1910, evidently relying upon his control of the party organization to secure his reëlection in case of party victory in the state. The leading candidate for the Democratic primary endorsement was repudiated by a portion of the party leaders in the state, and only the resolute support of Governor Wilson obtained for him an election at the hands of the Democratic legislature. The law of 1911 establishes

the Oregon system of selecting United States senators, and provides for a presidential-preference primary in the spring upon the lines first laid out in the Oregon law adopted by direct vote of the people in 1910.

Other States.—The Maine, Massachusetts and Wyoming laws are direct-primary laws of standard type, containing no novel features, and providing for strict party enrollment. The Massachusetts law was the culmination of a gradual establishment of the system of direct nominations beginning with an optional act in 1902, applying only to legislative nominations in cities and towns. The Maine law is of interest because it was rejected by the legislature and adopted by the people in September through the use of the initiative and referendum by a majority of more than three to one. In 1911 several states revised older direct-primary laws, namely, Wisconsin, Missouri, Kansas, Nebraska, Nevada and California, strengthening weak points developed by local experience, and incorporating features found elsewhere to be more suitable. In South Dakota, the legislature refused to enact a measure for the improvement of the existing direct-primary law, and the measure will be referred to the people in 1912. In some of these states, provision was made for rotating upon the ballot the names of candidates for each office, in order to destroy the advantage accruing under the system of arranging names in alphabetical order to the candidate whose name heads the list. The chief novelty in the recent primary legislation of the states was the enactment in Wisconsin of the long discussed "Mary Ann" amendment, (see *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1910, pp. 143, 144), providing for preferential voting in the primary. Preferential voting upon the Idaho plan was established during 1911 in North Dakota.

PRESIDENTIAL PREFERENCE PRIMARY

The most notable innovation in direct-primary legislation is the presidential-preference vote. The scheme of giving voters an opportunity to vote directly upon presidential candidates and to instruct delegates to national nominating conventions accordingly, originated in Oregon. It was one of the measures submitted to the people in Nov., 1910, by the People's Power League (see *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1910, pp. 153-155), and adopted. During the year 1911 provision for direct voting upon presidential candidates was incorporated into the primary legislation of four states in addition to Oregon, namely, New Jersey, Wisconsin, Nebraska, and North Dakota. In these states a special primary will be held in the spring of 1912 for the purpose of instructing the state delegations to the national conventions of both parties.

New Jersey.—The law of New Jersey is a good sample of the laws of these states. It provides that delegates to national conventions must be selected directly by the party voters, and may be pledged to support a candidate. At the same time, the voters may indicate their preference directly between the candidates suggested by at least 1,000 of their friends within the state for the party nomination to the presidency. The law does not attempt to pledge the successful candidates for selection as delegates to the national conventions to support the party's choice for the presidential nominations, although any candidate or group of candidates for selection as delegates could pledge themselves to support, if selected, the party's choice. Thus the principle of the Oregon system of selecting United States senators is rendered optional for the selection of party candidates for the presidency, so far, at least, as the vote of the state in the national convention is concerned. The New Jersey law further provides that the delegates shall be selected by congressional districts, except the allotted number of delegates-at-large, who are to be selected by the party voters of the

state as a whole. Thus, the presidential preference primary, though established for both parties alike, need not interfere with the maintenance of the unit rule in the Democratic national conventions and of the congressional district-autonomy rule in the Republican convention.

Probable Extension.—Other states have been considering the same device. In October the National Progressive Republican League issued a public letter to the chairmen of Republican state committees, suggesting that the presidential-preference primary be held under a special party rule in all states where not provided for by law. Whatever action may be taken by the party chairmen, other states will doubtless adopt the presidential-preference primary in the legislative sessions of 1912, and the 1912 presidential nominations will be characterized by the beginning of a system of presidential direct primaries. Thus, a system of presidential elections is apparently coming about, closely resembling that suggested by Senator Benton of Missouri at the time of the "scrub race" for the presidency in 1824 (see Thomas Hart Benton: *Thirty Years' View*). If the requirement of party registration for the purpose of participation in a presidential primary were removed, we would have precisely the sort of preliminary and final election scheme outlined by the sturdy old Jackson democrat before the system of national delegate conventions came into being.

PARTY ENROLLMENT

The enforcement of a rigid test of party affiliation is certainly the weakest feature of contemporary primary legislation. It has been generally adopted, wherever the direct primary has been adopted. Yet it has aroused much criticism. (See *Popular Government and Current Politics*, AMERICAN YEAR BOOK, 1910, pp. 148-150.) In Massachusetts the Democratic state platform in 1911 contained a pledge to abolish party enrollment for the primary election, and in other parts of the country the growing recognition that the direct primary has become an integral part of the electoral process has strengthened the demand on behalf of independent voters that they be admitted to the primary upon terms consistent with their self-respect.

THE SHORT BALLOT

An unexpected result of the direct primary is to emphasize the need for a short ballot. The average voter is learning by hard experience what had long been foreseen by the more sagacious leaders. In the words of Woodrow Wilson:

> We have given the people something so vast and complicated to do in asking them to select all the officers of government that they cannot do it. It must be done for them by professionals. . . . The obvious remedy is to make their task simple and practicable, to make it something that they can do and can take interest in doing without neglecting their daily business and turning politicians. We have been mistaken—this is the long and the short of the matter—in supposing that we were giving the people control of their governments by making all offices elective. We actually, as a matter of fact and of experience, put them in control only when we make only the chief, the really responsible, offices elective, allow those whom we elect to appoint all the minor officials, all executive agents, and hold them strictly responsible as the superintendents of our business.

Principles.—The principles of the short ballot may be summed up as follows: (1) that only those offices should be elective which are important enough to attract (and deserve) public examination; and (2) that very few offices should be filled by election at one time, so as to permit adequate and unconfused public examination of the candidates. Already state short-ballot organizations have been formed in New York and Ohio, and preparations are under way for the shortening of the ballot in those states by constitutional amendment.

Adoption.—The short ballot continues to be widely adopted in local government in connection with the spread of city government by commission. (See XI, *Municipal Government.*) It has also already begun to be taken up by the progressive leaders in the West. California, under the leadership of Governor Hiram Johnson removed the office of state printer from the elective class by statute, and submitted two short-ballot amendments to the state constitution at the special election on Oct. 10. One provided that the clerk of the state Supreme Court should be appointed by the court, and not elected by the people, as heretofore, and that the three railroad commissioners should also be removed from the ballot. The other provided for home-rule county charters, the aim being to facilitate the reduction of the number of elective county officials. Both amendments were adopted by the people.

For an excellent and most readable presentation of the case for the short ballot, see Richard S. Childs' recent book, *Short Ballot Principles.*

WOMAN SUFFRAGE

The chief event of the year 1911 in the progress of woman suffrage was the adoption of the equal suffrage amendment in California on Oct. 10, by a small majority. The total number of equal suffrage states is now six, the others being Washington (1910), Idaho (1896), Utah (1896), Colorado (1893), and Wyoming (1869). In four states the appropriate steps were taken for the submission of equal-suffrage amendments in 1912, namely, in Kansas, Nevada, Oregon and Wisconsin. Kansas already gives women the vote in all municipal elections. Two other states, Iowa and Louisiana, give women a tax-paying suffrage. Some form of school suffrage for women exists in 17 states, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Kentucky, Ohio, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Nebraska, Oklahoma, Arizona and Oregon. Four states, New York, Delaware, Michigan and Montana give women both tax-paying and school suffrage. There are thus only 18 states in the Union in which women do not possess the ballot in some form.

Bills for equal suffrage for women were introduced into the legislatures of 22 states during the sessions of 1911, although only five legislatures (including that of California) voted for the submission of the question to the people. In almost every case, the woman suffrage votes in the legislatures were larger than ever before, the California assembly voting for submission by a majority of 65 to six, and the Oregon legislature voting for submission unanimously. In Massachusetts, the Democratic state platform declared for the submission to the voters of a woman-suffrage public-opinion bill. The woman suffragists have never been more active than during 1911, and the increased public interest in their propaganda is attested both by the greater attention devoted to the movement in the press, and by the growth of the various woman-suffrage organizations. Few state campaigns were waged in 1911, and there was, therefore, no occasion for the political parties in most of the states to take notice of the recent progress of the movement for equal suffrage.

PUBLICITY OF CAMPAIGN FUNDS

Federal Legislation.—The movement for the regulation of political expenditures in the United States began in 1890. By the beginning of the year 1911, thirty-five states had enacted some sort of campaign fund legislation. Four of these states, however, had repealed their original legislation, and one other had contented itself with the prohibition of contributions by corporations, without any requirement of publicity, or limitation upon the amount or object of expenditures. In 1907, the United States first entered the field with an act absolutely

prohibiting contributions to funds by corporations chartered by the United States, and prohibiting contributions by all corporations to funds to be used in connection with the election of federal officers. By the beginning of 1911 sixteen states had enacted laws prohibiting contributions by corporations to state campaign funds, and other states passed similar legislation in 1911. In 1910, the federal government passed an act requiring the publication after election of the receipts and expenditures of individuals or organizations, aiding or opposing candidates for federal office in two or more states. This law would apparently require the filing of statements by such organizations as the American Federation of Labor, and the Prohibitionists and Socialists, but only the Republican and Democratic congressional campaign committees actually published any statements. In 1911, Congress passed a much more stringent act, providing for publication before and after both primaries and elections, of all receipts and expenditures by or on behalf of any candidate for election to a federal office, and limiting the total amount that might be expended in both primary and election by any candidate for Congress to $5,000, and by any candidate for the Senate to $10,000. The federal law, however, does not restrict the amount that may be expended on behalf of a candidate by others or that may be contributed to the funds of the political parties. During 1911, ten states passed campaign-publicity laws, raising the total number of states now possessing such measures on their statute books to 37. The only states now remaining without any kind of legislation for campaign publicity or limitation of political receipts and expenditures are Rhode Island, Delaware, North Carolina, Mississippi, Louisiana, Utah, Illinois, Michigan, New Mexico and Nevada.

The Wisconsin Law.—Corrupt-practices legislation was originally characterized by the definition of election practices declared to be corrupt and the provision of penalties for offenders. Such for example, were the laws against bribery, treating, undue influence, intimidation and personation. The best recent corrupt practices acts proceed on a contrary principle. The acts define the practices declared to be legal and prohibit all others. Thus, the Wisconsin corrupt-practices act of 1911 prohibits disbursements for political purposes, whether in connection with a primary or general election, by any candidate except: (*a*) for his own personal hotel and traveling expenses; (*b*) for payments which he may make to the state pursuant to law; (*c*) for contributions to his duly registered personal campaign committee; (*d*) for contributions to his party committee; and (*e*) for the purposes for which a party committee may lawfully make disbursements, when the candidate has no personal campaign committee. After the primary, no candidate for election to the United States Senate may make any disbursements on behalf of his candidacy, except contributions to his party committees, for his own actual necessary personal traveling expenses, and for postage, telephone and telegraph expenses, and for payments which he may make to the state pursuant to law.

The Wisconsin law of 1911 further prohibits disbursements by party and personal campaign committees except: (*a*) for maintenance of headquarters and for hall rentals, incident to the holding of public meetings; (*b*) for necessary stationery, postage and clerical assistance to be employed for the candidate at his headquarters or at the headquarters of the personal campaign committee, incident to the writing, addressing and mailing of letters and campaign literature; (*c*) for necessary expenses incident to the furnishing and printing of badges, banners and other insignia, to the printing and posting of hand bills, posters, lithographs and other campaign literature and the distribution of the same through the mails or otherwise; (*d*) for campaign advertising in newspapers, periodicals or magazines; and (*e*) for actual necessary personal expenses of public speakers.

All persons having bills or claims against candidates or party commit-

tees must present them within ten days after the day of the primary or general election in connection with which the charge was incurred. No bills or claims presented later are to be paid. No person or group of persons other than the candidate, or his personal campaign committee, or a party committee may make any disbursements for political purposes otherwise than through a personal campaign committee or a party committee, except for expenses incurred for rent of hall or other rooms, for hiring speakers, for printing, for postage, for advertising, for distributing printed matter, for clerical assistance, and for hotel and traveling expenses. Contributions by corporations to campaign funds are expressly forbidden. So also are contributions by candidates or committees to religious, charitable or fraternal organizations, but regular subscriptions or contributions may be paid during a campaign as usual. No payments whatsoever may be made on account of services rendered on primary or general election day, or for the expense of transportation of any voter to or from the polls.

The Wisconsin act also regulates the publication of political advertisements, provides for the declaration of ownership of periodical publications by candidates, and for publicity pamphlets for the use of candidates at the primary or general elections after the style of the Oregon candidates' publicity pamphlets. The most important features of the act, however, are the requirements in the matter of publicity of campaign contributions and expenditures. Statements must be filed by candidates and committees on the second Saturday after the first disbursement is made, and thereafter on the second Saturday of each month until all disbursements and promises have been accounted for, and also on the Saturday preceding any primary or general election. All items of $5.00 or more must be separately accounted for, and each statement after the first must contain a summary of all preceding statements. The name of a candidate chosen at a primary election or otherwise is not to be printed on the official ballot unless all the statements relating to his nomination have been filed, and an officer chosen at a general election may not retain his office, if found guilty of a neglect or violation of the law, except that in the cases of United States senators or congressmen, or members of the state legislature, the judge of the court in which the proceedings against an officer are brought shall transmit a copy of his findings to the legislative body to which the candidate has been chosen without a final adjudication of the case in court.

Finally, the Wisconsin act limits the sums that may be lawfully expended by or on behalf of any candidate for nomination and election to public office. The limitations are based, not upon the number of voters to participate in the elections for the various offices, as in California under the act of 1909, nor upon a percentage of the salary of the office sought, as under the Oregon law of 1908, but upon the legislature's estimates of maximum reasonable expenditures. A candidate for the United States Senate is limited to $7,500 ($10,000 under the federal law of 1911), for Congress to $2,500 ($5,000 under the federal law), for governor, judge of the Supreme Court or state superintendent of schools to $5,000, for other state offices to smaller sums. Furthermore, the state central committee is limited to $10,000 in excess of sums paid by it on behalf of candidates and reckoned in the calculation of their personal expenditures.

Other States.—This is the most comprehensive and drastic act yet passed in any American state. All of the ten states which passed corrupt-practices acts in 1911, except Maine, provide for publication of receipts and expenditures after the primary as well as after the general election, but none follows the example of Wisconsin in providing for publicity before the primary and thereafter continuously until after the general election. Several of these states, however, follow the Wisconsin example in placing a limit upon the total amount of lawful expenditures by or on behalf of candidates for public office. Massachu-

setts, New Jersey and Ohio prescribe a scale of maximum expenditures in nomination and election campaigns for the various offices, and North Dakota limits expenditures to 15 per cent. of the annual salary of the office sought in the primary and to the same in the general election campaign. Massachusetts also limits lawful expenditures to $25 per thousand votes cast for all candidates for the office sought at the last preceding election, and New Jersey to 25 per cent. of the annual salary. North Dakota makes provision similar to that of Wisconsin for the publication of candidates' publicity pamphlets during the primary and general election campaigns. Most of the states specify what disbursements may lawfully be made by candidates and require the making of all other political expenditures through a personal campaign or party committees. Most of them, also, penalize delinquent candidates by omitting their names from the official ballot, and elected officers who violate the law, by forfeiture of office.

As a result of the corrupt-practices legislation of 1911, no fewer than 21 states now prohibit campaign contributions by corporations, and require the publication of campaign receipts and expenditures after the primary as well as after the general election. Although 36 states require publicity after the general election, not more than half that number limit the amount of campaign expenditures, and the experiment of pre-primary and pre-election publicity has but been begun. The experiment of appropriating money out of the funds of the state for the use of political parties, attempted by the Colorado legislature in 1909 and held unconstitutional by the courts, has not been repeated. In general, however, recognition of the fact that political campaigning is growing too expensive is becoming wide-spread, and a remedy is being sought by the statutory limitation of expenditures.

APPORTIONMENT

W. F. Willcox

The Act of Reapportionment.—At its special session Congress passed and the President signed a bill fixing the number of representatives for the next ten years at 433, with the possibility of two more in case both Arizona and New Mexico should be admitted to the family of states. Under the new law there are to be 42 more members in the House of Representatives than there were in the preceding decade. The average population of a district, 211,877, is greater by 17,695 than the average population of a district under the earlier law. This increase in the size of the House of Representatives was warmly opposed both in the House and in the Senate, the main argument in its favor being that it was necessary in order to prevent any state from receiving a smaller number of members than it previously had.

Increases in Representation.—The states increasing the number of their representatives were as follows:

	Increase.
Alabama, Colorado, Florida, Georgia, Idaho, Louisiana, Michigan, Minnesota, Montana, North Dakota, Ohio, Oregon, Rhode Island, South Dakota, Utah, West Virginia, one each, or a total of	16
Illinois, Massachusetts, New Jersey, Texas, Washington, 2 each	10
California, Oklahoma, 3 each	6
Pennsylvania	4
New York	6
Total	42

Each of the other 21 states receives its present number.

Former Methods of Apportionment.—In the method of apportionment a slight change was introduced. During the early history of the country the number to be used as a divisor into the population of each state was assumed arbitrarily as a round number and one representative assigned to a state for each whole number in the quotient. Thus if 40,000 were the divisor a state having any popu-

lation between 160,000 and 200,000 would receive four representatives. In 1840 the plan was changed to give a representative for each fraction of more than one half. Under the condition just supposed, a state having any population between 140,000 and 180,000 would receive four Representatives. In 1850 the plan of fixing the divisor arbitrarily was abandoned for the plan of reaching it by dividing the population of all the states by the assumed number of representatives. Representatives were assigned for each unit in the series of quotients found by dividing the population of each state by this quotient, and then one for each fraction in order of size until the requisite number of representatives was apportioned. By this method representatives were sometimes given for remainders of less than one-half and at other times not given for remainders of more than one-half. Occasionally it happened that an increase in the size of the House by one would decrease the representatives apportioned to some one state, "Alabama paradox."

The New Method.—The method introduced in 1910 assumed that the divisor was a continuous quantity between certain limits, changing, that is, by indefinitely small increments. The critical points at which the decimal part of the quotient for each state passes one-half can be easily determined and divisors were selected midway between each two critical points. A series of tables was thus obtained each apportioning one more representative than its predecessor and each apportioning one representative for every major fraction and none for any minor fraction, a combination of advantages theoretical and political, which led to these tables receiving practically no criticism in the debates and made it possible for the first time in recent years for the discussion in Congress to center on the political questions involved without digressing into an examination of the method of apportionment itself.

IX. THE NATIONAL ADMINISTRATION

THE PRESIDENT AND VICE-PRESIDENT

PRESIDENTS OF THE UNITED STATES

	Name.	Born.	Residence when Elected.	Politics.	Inaugurated.	Died.
1	George Washington	Feb. 22, 1732	Mount Vernon, Va.	None	1789	Dec. 14, 1799
2	John Adams	Oct. 30, 1735	Quincy, Mass.	Fed.	1797	July 4, 1826
3	Thomas Jefferson	April 13, 1743	Monticello, Va.	Dem.	1801	July 4, 1826
4	James Madison	Mar. 16, 1751	Montpelier, Va.	Dem.	1809	June 28, 1836
5	James Monroe	April 28, 1758	Oak Hill, Va.	Dem.	1817	July 4, 1831
6	John Quincy Adams	July 11, 1767	Quincy, Mass.	Fed.	1825	Feb. 23, 1848
7	Andrew Jackson	May 15, 1767	Hermitage, Tenn.	Dem.	1829	June 8, 1845
8	Martin Van Buren	Dec. 5, 1782	Kinderhook, N. Y.	Dem.	1837	July 24, 1862
9	William H. Harrison	Feb. 9, 1773	North Bend, O.	Whig.	1841	April 4, 1841
10	John Tyler	Mar. 29, 1790	Williamsburg, Va.	Dem.	1841	Jan. 17, 1862
11	James Knox Polk	Nov. 2, 1795	Nashville, Tenn.	Dem.	1845	June 15, 1849
12	Zachary Taylor	Nov. 24, 1784	Baton Rouge, La.	Whig.	1849	July 9, 1850
13	Millard Fillmore	Jan. 7, 1800	Buffalo, N. Y.	Whig.	1850	Mar. 9, 1874
14	Franklin Pierce	Nov. 23, 1804	Concord, N. H.	Dem.	1853	Oct. 8, 1869
15	James Buchanan	April 23, 1791	Wheatland, Pa.	Dem.	1857	June 1, 1868
16	Abraham Lincoln	Feb. 12, 1809	Springfield, Ill.	Rep.	1861	April 15, 1865
17	Andrew Johnson	Dec. 20, 1808	Greenville, Tenn.	Rep.	1865	July 31, 1875
18	Ulysses S. Grant	April 27, 1822	Washington, D. C.	Rep.	1869	July 23, 1885
19	Rutherford B. Hayes	Oct. 4, 1822	Fremont, O.	Rep.	1877	Jan. 17, 1893
20	James A. Garfield	Nov. 19, 1831	Mentor, O.	Rep.	1881	Sept. 19, 1881
21	Chester A. Arthur	Oct. 5, 1830	New York City	Rep.	1881	Nov. 18, 1886
22	Grover Cleveland	Mar. 18, 1837	Buffalo, N. Y.	Dem.	1885	June 24, 1908
23	Benjamin Harrison	Aug. 20, 1833	Indianapolis, Ind.	Rep.	1889	Mar. 13, 1901
24	Grover Cleveland	Mar. 18, 1837	New York City	Dem.	1893	June 24, 1908
25	William McKinley	Jan. 29, 1843	Canton, O.	Rep.	1897–'01	Sept. 14, 1901
26	Theodore Roosevelt	Oct. 27, 1858	Oyster Bay, N. Y.	Rep.	1901	
27	William H. Taft	Sept. 15, 1857	Cincinnati, O.	Rep.	1909	

THE ELECTORAL COLLEGE

The ratio of representation in the House of Representatives, upon which the Electoral College is based, has been as follows:

Constitution, 1789, ratio 30,000	65	Seventh Census, 1853, ratio 93,423	233
First Census, 1793, ratio 33,000	105	Eighth Census, 1863, ratio 127,381	243
Second Census, 1803, ratio 33,000	141	Ninth Census, 1873, ratio 131,425	293
Third Census, 1813, ratio 35,000	181	Tenth Census, 1883, ratio 151,911	325
Fourth Census, 1823, ratio 40,000	213	Eleventh Census, 1893, ratio 173,900	356
Fifth Census, 1833, ratio 47,700	240	Twelfth Census, 1900, ratio 194,182	386
Sixth Census, 1843, ratio 70,680	223	Thirteenth Census, 1910, ratio 211,877	433

The population at each census for purposes of representation was as follows:

1790	3,929,214	1840	17,069,453	1880	50,155,783
1800	5,308,483	1850	23,191,876	1890	62,622,250
1810	7,239,881	1860	31,443,321	1900	74,565,900
1820	9,633,822	1870	38,558,371	1910	91,402,151
1830	12,866,020				

VOTE FOR PRESIDENT, 1904, 1908

State.	1908.				1904.			
	El. Vote.		Pop. Vote.		El. Vote.		Pop. Vote.	
	Taft, Rep.	Bryan, Dem.	Taft, Rep.	Bryan, Dem.	Roosevelt, R.	Parker, Dem.	Roosevelt, R.	Parker Dem.
Alabama	..	11	26,283	74,374	..	11	22,472	79,857
Arkansas	..	9	56,679	87,015	..	9	46,860	64,434
California	10	..	214,398	127,492	10	..	205,226	89,294
Colorado	..	5	123,732	126,772	5	..	134,687	100,105
Connecticut	7	..	112,815	68,255	7	..	111,089	72,909
Delaware	3	..	25,007	22,072	3	..	23,714	19,360
Florida	..	5	10,654	31,104	..	5	8,314	27,046
Georgia	..	13	41,692	72,350	..	13	24,003	83,472
Idaho	3	..	52,621	36,162	3	..	47,783	18,480
Illinois	27	..	629,932	450,810	27	..	632,645	327,606
Indiana	15	..	348,993	338,262	15	..	369,289	274,345
Iowa	13	..	275,210	200,771	13	..	307,907	149,141
Kansas	10	..	197,216	161,209	10	..	210,873	84,800
Kentucky	..	13	235,711	244,092	..	13	205,277	217,170
Louisiana	..	9	8,958	63,568	..	9	5,205	47,708
Maine	6	..	66,987	35,403	6	..	64,437	27,630
Maryland	2	6	116,513	115,908	1	7	100,497	109,446
Massachusetts	16	..	265,966	155,543	16	..	257,822	165,746
Michigan	14	..	333,313	174,313	14	..	361,866	134,151
Minnesota	11	..	195,876	109,395	11	..	216,651	55,187
Mississippi	..	10	4,363	58,286	..	10	3,147	53,280
Missouri	18	..	347,203	346,574	18	..	321,447	295,847
Montana	3	..	32,333	29,326	3	..	34,392	21,773
Nebraska	..	8	126,997	131,099	8	..	138,558	51,876
Nevada	..	3	10,775	11,212	3	..	6,867	3,982
New Hampshire	4	..	53,144	33,655	4	..	54,179	33,905
New Jersey	12	..	265,326	182,567	12	..	245,165	164,566
New York	39	..	870,070	667,468	39	..	859,533	683,981
North Carolina	..	12	114,887	136,928	..	12	82,442	124,121
North Dakota	4	..	57,680	32,885	4	..	52,595	14,253
Ohio	23	..	572,312	502,721	23	..	600,096	344,674
Oklahoma	..	7	110,558	122,406	..	..	.....	.....
Oregon	4	..	62,530	38,049	4	..	60,455	17,521
Pennsylvania	34	..	745,779	448,785	34	..	840,949	335,430
Rhode Island	4	..	43,942	24,706	4	..	41,605	24,339
South Carolina	..	9	3,963	62,288	..	9	2,271	52,863
South Dakota	4	..	67,466	40,266	4	..	72,083	22,002
Tennessee	..	12	118,324	135,608	..	12	105,369	131,653
Texas	..	18	65,666	217,302	..	18	51,242	167,220
Utah	3	..	61,015	42,601	3	..	62,444	33,413
Vermont	4	..	39,558	11,500	4	..	40,459	9,777
Virginia	..	12	52,573	82,946	..	12	46,450	80,638
Washington	5	..	106,062	58,691	5	..	101,504	28,098
West Virginia	7	..	137,869	111,418	7	..	132,608	100,850
Wisconsin	13	..	247,747	166,632	13	..	280,164	124,107
Wyoming	3	..	20,846	14,918	3	..	20,489	8,830
Total	321	162	7,677,544	6,405,707	336	140	7,613,130	5,077,386
Plurality	159	...	1,271,837	.....	196	...	2,535,744	.....

Note.—In 1908 there were cast for Debs (Soc.), 420,464 votes; for Hisgen (Indep. League), 86,628; for Chafin (Pro.), 251,570. In 1904 there were cast in addition, for Debs (Soc.), 401,587 votes; for Swallow (Pro.), 260,297; for Watson (Pop.), 114,637; for Corregan (S. L.), 32,657.

President, William Howard Taft, Ohio. Salary, $75,000; traveling expenses, $25,000. Secretary to the President, Charles D. Hilles, New York, formerly Assistant Secretary of the Treasury, who succeeded Charles D. Norton in April, 1911. Salary $7,500.

Vice-President, James Schoolcraft Sherman, New York. Salary, $12,000. He presides over the Senate with no vote except in case of a tie.

The President and Vice-President are elected for terms of four years by the State Electoral Colleges, whose membership is based upon the congressional apportionment as shown upon the opposite page. This apportionment is revised by Congress after each decennial census.

EXECUTIVE DEPARTMENTS

Nine cabinet officers, constituting the President's advisory council, and each in charge of one of the great departments of the Government, are nominated by the President and confirmed by the Senate, for a term subject to the President's pleasure. Salary, $12,000 each.

With two exceptions, the present cabinet was appointed March 6, 1909. On March 7, 1911, President Taft accepted the resignation of Richard A. Ballinger, Secretary of the Interior (see IV, *Conservation*, and XII, *Alaska*), appointing in his stead Walter L. Fisher, of Chicago. On May 12, Jacob M. Dickinson resigned the portfolio of Secretary of War; he was succeeded by Henry L. Stimson, of New York, who assumed office May 22.

By act of Congress, in the case of vacancy in office of the President and Vice-President, the cabinet officers succeed to the Presidency in the order named below:

Department of State

Secretary of State. — Philander Chase Knox, Pa.

Charged with negotiations relating to foreign affairs.

Assistant Secretary.—Huntington Wilson, Ill. $5,000.

Second Assistant Secretary.—Alvey A. Adee, D. C. $4,500.

Third Assistant Secretary.—Chandler Hale, Me. $4,500.

Director of the Consular Service.—Wilbur J. Carr, N. Y. $4,500.

Counselor.—Chandler P. Anderson, N. Y. $6,000.

Solicitor.—Joshua R. Clark, Utah. $5,000.

Resident Diplomatic Officer.—Thomas C. Dawson, Iowa. $7,500.

Bureau of Accounts.—Chief, Thomas Morrison, N. Y. $2,300.

Bureau of Appointments.—Chief, M. M. Shand, N. J. $2,100.

Bureau of Citizenship.—Chief, Richard W. Flournoy, Jr., Md. $2,100.

Consular Bureau.—Chief, Herbert C. Hengstler, Ohio. $2,250.

Diplomatic Bureau.—Chief, Sydney Y. Smith, D. C. $2,250.

Bureau of Indexes and Archives.—Chief, John R. Buck, Me. $2,100.

Bureau of Rolls and Library.—Chief, John A. Tonner, O. $2,100.

Bureau of Trade Relations.—Chief, John Ball Osborne, Pa. $2,100. Charged with compilation of commercial information for the use of the Department of State, and with collection of consular reports.

Division of Latin American Affairs.—Chief, William T. S. Doyle, Cal., $4,500.

Division of Far-Eastern Affairs.—Chief, Ransford S. Miller, N. Y. $4,500.

Division of Near-Eastern Affairs.—Asst. Chief, Charles W. Fowle, Mass. $2,500.

Division of Information. — Chief, Sevelton L. Brown, D. C. $3,000.

Treasury Department

Secretary of the Treasury.—Franklin MacVeagh, Ill.

Charged with management of the national finances. He prepares plans for improvement of the revenue and support of the public credit; superintends collection of the revenue; grants warrants for all moneys paid from and into the Treasury; controls construction of public buildings; coinage and printing of money; and the administration of the life-saving, revenue cutter, and the public health and marine hospital service.

Assistant Secretaries.—James F. Curtis, Mass., A. Piatt Andrew, Mass., Robert O. Bailey, D. C., $5,000 each.

Supervising Architect. — James K. Taylor, Pa. $6,000. Charged with superintending the construction and repair of public buildings.

Engraving and Printing.—Chief of Bureau, Joseph E. Ralph, Ill. $6,000. Produces all the securities and similar work of the Government printed from steel plates.

Secret Service.—Chief, —— ——. Charged with detection of conterfeiting, and similar frauds on the Government.

Comptroller of the Treasury.—Robert J. Tracewell, Ind. $6,000. Construes the laws relating to appropriations and methods of rendering and stating accounts.

Treasurer of the United States.—Lee McClung, Tenn. $8,000. Charged with the receipt and disbursement of all public moneys deposited in the Treasury and sub-treasuries and in national bank United States depositories.

Comptroller of the Currency.—Lawrence O. Murray, New York. $5,000. Has supervision of the national banks,

their examination and reports; the preparation and issue of national bank circulation; the redemption and destruction of national bank notes.

Internal Revenue. — Commissioner, Royal E. Cabell, Va. $6,000. General supervision of the collection of all internal revenue taxes, and the enforcement of internal revenue laws.

The Mint.—Director, George E. Roberts. Ia. $5,000. General supervision of the mints and assay offices.

Public Health and Marine Hospital Service.—Surg.-General, ——— ———. Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious diseases; supervision of the quarantine service of the United States, and of the marine hospitals.

War Department

Secretary of War.—Henry Lewis Stimson, N. Y.

Charged with supervision of national defense, and army expenditures.

Assistant Secretary of War.—Robert Shaw Oliver, N. Y. $5,000.

The General Staff.—Chief, Maj.-Gen. Leonard Wood. Charged with preparation of plans for the national defense, and the promotion of the efficiency of the Army.

The chiefs of the military bureaus are officers of the Regular Army of the United States, as follows:

Adjutant-General.—Maj.-Gen. F. C. Ainsworth. $8,000.

Inspector-General.—Brig.-Gen. E. A. Garlington. $6,000.

Judge-Advocate General.—Brig.-Gen. E. H. Crowder. $6,000.

Quartermaster-General—Brig.-Gen. J. B. Aleshire. $6,000.

Commissary-General.—Brig.-Gen. H. G. Sharpe. $6,000.

Surgeon-General.—Brig.-Gen. G. H. Torney. $6,000.

Paymaster-General.—Brig.-Gen. C. H. Whipple. $6,000.

Chief of Engineers.—Brig.-Gen. William H. Bixby. $6,000.

Chief of Ordnance.—Brig.-Gen. William Crozier. $6,000.

Chief Signal Officer.—Brig.-Gen. James Allen. $6,000.

Chief of Bureau of Insular Affairs.—Brig.-Gen. C. R. Edwards. $6,000.

Board of Engineers for Rivers and Harbors.—A permanent body which investigates in their engineering, commercial, navigable and economic aspects all surveys and river and harbor improvements proposed by Congress.

Department of Justice

Attorney-General.—George Woodward Wickersham, N. Y.

Represents the United States in all legal matters.

Solicitor-General.—Frederick W. Lehmann, Missouri, $10,000. Charged with the business of the Government in the Supreme Court and in State Courts.

Assistant to Attorney-General.—James A. Fowler, Tenn. $7,000. Charged with matters arising under the federal anti-trust and interstate commerce laws. Seven Assistant Attorneys-General. $5,000 each.

Solicitor State Department.—J. Reuben Clark, Jr., Utah. $5,000.

Post Office Department

Postmaster General.—Frank Harris Hitchcock, Mass.

Has direction and management of the Post Office Department.

First Assistant Postmaster-General.—C. P. Grandfield, Mo. $5.000, Charged with postmasters' appointments; salaries and allowance; city delivery service.

Second Assistant Postmaster-General.—Joseph Stewart, Mo. $5,000. Charged with railway adjustments, miscellaneous transportation, foreign mails, railway mail service, inspection equipment.

Third Assistant Postmaster-General.—James J. Britt, N. C. $5,000. Charged with financial system, stamps, money orders, registered mails, classification of domestic mail matter, redemption.

Fourth Assistant Postmaster-General.—P. V. DeGraw, Pa. $5,000. Charged with rural mails, supplies, dead letters, post-route maps.

Navy Department

Secretary of Navy.—George von Lengerke Meyer, Mass.

Charged with direction of the Navy and superintendence of construction, equipment, and employment of vessels of war.

Assistant Secretary.—Beekman Winthrop, New York. $5,000.

General Board of the Navy.—The General Board is advisory to the Secretary of the Navy, and is composed of the following officers:

Admiral of the Navy George Dewey, president; Rear-Adm. Raymond P. Rodgers; Rear-Adm. Richard Wainwright,

aid for operations; Rear-Adm. William P. Potter, aid for personnel; Rear-Adm. Chas. E. Vreeland, aid for inspections; Rear-Adm. Newton E. Mason; Rear-Adm. Sidney A. Staunton; Capt. Frank F. Fletcher, aid for material; Capt. Templin M. Potts, chief intelligence officer; Capt. William J. Maxwell; Capt. Spencer S. Wood, secretary.

Bureau of Yards and Docks.—Chief, Civil Engineer Richard C. Hollyday. $6,000. Charged with the construction and maintenance of docks and naval buildings.

Bureau of Equipment.—By authority of the Naval Appropriation Act of 1910 abolished for one year, and its duties distributed among the other bureaus, as a trial of the Meyer plan of naval reorganization.

Bureau of Navigation.—Chief, Rear-Adm. R. F. Nicholson. $6,000. Charged with the education and supervision of line officers and of enlisted men.

Bureau of Ordnance.—Chief, Rear-Adm. W. C. Twining. $8,000. Charged with supervision of the Torpedo Station, magazines on shore, and with the manufacture of explosives, arms and equipment.

Bureau of Construction and Repair.—Naval Constructor, Richard M. Watt. $6,000. Duties relate to designing, building and repairing ships, and their docking and care.

Bureau of Steam Engineering.—Engineer-in-Chief, Rear-Adm. Hutch I. Cone. $6,000. Charged with designing, building and repairing steam machinery for naval ships.

Bureau of Supplies and Accounts.—Paymaster-Gen. Thomas I. Cowie. $6,000. Charged with the supply of funds for disbursing officers, and the purchase of all naval supplies.

Bureau of Medicine and Surgery.—Surgeon-General, Charles F. Stokes. $6,000. Control of naval hospitals and hospital ships.

Judge-Advocate-General. — Capt. Robert L. Russell. $5,000. Charged with supervision of all legal aspects of the Navy Department. Solicitor, Henry M. Butler, $4,000.

Marine Corps.—Commandant, Major-Gen. William P. Biddle. $8,000.

Department of the Interior

Secretary of the Interior.—Walter Lowrie Fisher, Ill.

Charged with patents, pensions, public lands and parks, education, and Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Samuel Adams, Ill. $6,000.

General Land Office.—Commissioner, Fred Dennett, N. D. $5,000. Charged with the survey, management and disposition of the public lands.

Patent Office.—Commissioner, Edward B. Moore, Mich. $5,000. Administration of the patent laws, and supervision of the registration of trade-marks.

Pension Office.—Commissioner, James L. Davenport, D. C. $5,000. Supervision of adjudication of claims arising under laws granting Army or Navy service pensions.

Bureau of Indian Affairs.—Commissioner, Robert G. Valentine, Mass. $5,000. Has charge of the Indian tribes of the United States (exclusive of Alaska).

Bureau of Education.—Commissioner, Philander P. Claxton, Tenn. $5,000. Collects statistics and general information regarding education; has charge of the schools for native Alaskan children; supervises the reindeer industry in Alaska; administers the endowment fund for agricultural colleges and mechanical arts.

Geological Survey.—Director, George Otis Smith, Me. $6,000. Charged with classification of the public lands and examination of the geologic structure, mineral resources, and the mineral products of the national domain.

Reclamation Service.—Director, Frederick H. Newell. $7,500. Charged with the survey, construction, and operation of the reclamation and irrigation works in arid states, authorized by the act of June 17, 1902.

Bureau of Mines.—Director, Joseph A. Holmes, N. C. $6,000. To promote the mining industry of the United States, foster the safety of miners, and give attention to the treatment of ores and the use of explosives.

Department of Agriculture

Secretary of Agriculture.—James Wilson, Iowa.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, national forest reserves, and interstate game laws.

Assistant Secretary. — Willett M. Hays, Minn. $5,000.

Weather Bureau.—Chief, Willis L. Moore, Ill. $6,000. Charged with forecasting of weather for the benefit of agriculture, commerce and navigation.

Bureau of Animal Industry.—Chief, Dr. A. D. Melvin, Ill. $5,000. Conducts inspection of animals and meat food products; investigates communi-

cable diseases and their prevention, and the breeding and feeding of animals.

Bureau of Plant Industry.—Chief, B. T. Galloway, Mo. $5,000. Charged with the improvement of crops by breeding and selection, and the introduction of new plants and seeds to different parts of the United States.

Forest Service.—Chief, Henry S. Graves. $5,000. Charged with the administration of the National Forests, the investigation of forest problems and encouragement of protecting growing timber.

Bureau of Chemistry.—Chemist and Chief, H. W. Wiley, Ind. $5,000. Charged with the analysis of agricultural products and fertilizers, and the investigation of the composition and adulteration of foods and drugs.

Bureau of Soils.—Chief, Milton Whitney, Md. $3,500. Charged with investigating soils in their relations to climate and organic life.

Bureau of Entomology.—Chief, L. O. Howard, N. Y. $4,000. Charged with dissemination of information regarding injurious insects affecting forests, crops and fruits, and means of their elimination.

Bureau of Biological Survey.—Chief, Henry W. Henshaw, Mass. $3.000. Investigates the economic relations of animal life. Charged with enforcing the bird and game laws.

Office of Experiment Stations.—Director, A. C. True, Conn. $4.000. Authorized to promote the interests of agricultural education and investigation.

Office of Public Roads.—Director, Logan W. Page, Mass. $3,000. Charged with investigating road making, road maintenance and road materials, and collecting information regarding systems of road management.

Department of Commerce and Labor

Secretary of Commerce and Labor.—Charles Nagel, Mo.

Charged with promoting commerce, mining, manufacturing, shipping, fisheries, transportation, and labor. Also the supervision of alien immigration, and naturalization.

Assistant Secretary.—Benjamin S. Cable, Ill. $5,000.

Bureau of Corporations.—Commissioner, Herbert Knox Smith, Conn. $5,000. Authorized to investigate the organization and conduct of any corporation or combination engaged in interstate or foreign commerce (except railroads).

Bureau of Manufactures.—Commissioner, Albertus H. Baldwin, Conn. $4,000. Charged with development of manufacturing interests and markets therefor, domestic and foreign, by the publication of information.

Bureau of Labor.—Commissioner, Charles P. Neill, D. C. $5,000. Charged with matters pertaining to labor in its relations to capital, and the means of promoting prosperity among the laboring classes.

Light-House Service.—Commissioner, George R. Putnam, Ia. $5,000. Charged with the administrative duties relating to light-houses and protective signals.

Steamboat Inspection Service.—Supervising Inspector-General, George Uhler, Penn. $4,000. Charged with the inspection of vessels, the licensing of officers, and the administration of laws relating to steam vessels and their officers.

The Census Office.—Director, E. Dana Durand, Cal. $7,000 during decennial census period, $6,000 regular salary. The duty of the Census Office is to take, compile and publish the decennial censuses of the United States; the quinquennial censuses of agriculture and manufactures; the deaths in registration areas; the statistics of cotton ginned, and of cotton consumed; the annual statistics of cities; and to make such other statistical investigations as Congress may order.

Coast and Geodetic Survey.—Superintendent, Otto H. Tittmann, Mo. $6,000. Charged with survey of coasts under the jurisdiction of the United States, and publication of charts covering these coasts.

Bureau of Fisheries.—Commissioner, George M. Bowers, W. Va. $6,000. Charged with the propagation of useful food fishes, investigation of deep sea fishing grounds, and care of the Alaskan salmon fisheries and the Pribilof Islands seal herds.

Bureau of Navigation.—Commissioner, Eugene T. Chamberlain, N. Y. $4,000. Charged with superintendence of the commercial marine, issue of licenses, and collection of tonnage taxes.

Bureau of Immigration and Naturalization.—Commissioner-General, Daniel J. Keefe, Mich. $5,000. Charged with administration of immigration and naturalization laws.

Bureau of Standards.—Director, Samuel W. Stratton, Ill. $6,000. Charged with comparing and testing standards used in scientific investigations, commerce and educational institutions, with standards adopted or recognized by the Government.

Bureau of Statistics.—Chief, Oscar P. Austin, D. C. $4,000. Charged with the collection and publication of statistics of foreign and internal commerce.

Independent Bureaus and Institutions

Smithsonian Institution.—Secretary, Charles D. Walcott. $7,500. Established 1846, under the terms of James Smithson's will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publication and lectures. Managed by a Board of Regents. It cooperates with the Government and national scientific bodies.

National Museum.—Under the same management. Charged with preserving and utilizing objects of art, ethnological collections, geological and mineralogical specimens belonging to the United States.

Pan-American Union.—Director-General, John Barrett, Ore. $5,000. Established for the purpose of developing closer relations of commerce and friendship between the twenty-one republics of the Western Hemisphere.

Interstate Commerce Commission.—Seven members, each receiving an annual salary of $10,000. J. C. Clements, Ga., chairman; C. A. Prouty, Vt., F. K. Lane,, Cal., E. E. Clark, Ia., J. S. Harlan, Ill., B. H. Meyer, Wis., C. C. McChord, Ky. —— ——, Secretary. $5,000. The regulating statutes apply to interstate traffic only. Traffic transported wholly within a single state is excepted.

Civil Service Commission.—Commissioners, J. C. Black, Ill., Chairman. $4,500; J. A. McIlhenny, La., $4,000; W. S. Washburn, N. Y., $4,000. Charged with the conduct of competitive examinations of applicants for the classified civil service.

Government Printing Office.—Public Printer, S. B. Donnelly, N. Y. $5,500. Charged with the printing, press work, and binding of all Government publications of every description.

Isthmian Canal Commission.—Chairman and Chief Engineer, Col. George W. Goethals, assisted by five army officers as commissioners. $15,000, inclusive of army pay. Secretary, Joseph Bucklin Bishop, N. Y. $5,000. Charged with the construction of the Panama Canal.

The Library of Congress.—Librarian, Herbert Putnam, Mass. $6,000. Primarily a reference library, composed of numerous collections, presented and bought. It is the third largest collection in the world. Under the jurisdiction of Congress.

Tariff Board.—Chairman, Henry C. Emery, Conn.; William M. Howard, Ga.; James B. Reynolds, Mass.; Alvin H. Sanders, Ill.; Thomas W. Page, Va.; Statistician, N. I. Stone, D. C.

Commission of Fine Arts.—Established 1910, to pass upon sites and plans for future buildings, monuments, etc., in the District of Columbia. No compensation, but actual expenses allowed. Chairman, Daniel H. Burnham, Ill.; Vice-Chairman, Francis D. Millet, D. C., painter; Frederick Law Olmsted, Jr., Mass., landscape architect; Thomas Hastings, N. Y., architect; Daniel C. French, N. Y., sculptor; Cass Gilbert, N. Y., architect; Charles Moore, Mich.; Secretary, Col. Spencer Cosby, D. C.

THE SIXTY-FIRST CONGRESS

Among the more important legislation of the third session were the following (see also VII, *Legislative Tendencies*):

An act for the purchase or erection of embassy, legation, legislation and consular buildings abroad.

An act to diminish the expense of proceedings on appeal and writ of error or of certiorari.

An act to provide for the entry under bond of exhibits of arts, sciences and industries.

An act to prevent the disclosure of national defense secrets.

An act amending the trade-mark statutes.

An act to enable any state to cooperate with any other state or states, or with the United States, for the protection of the watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers. (See XIX, *Forestry.*)

An act to authorize the receipt of certified checks drawn on national and state banks for duties on imports and internal taxes, and for other purposes.

An act providing for the promotion of Civil Engineer Robert E. Peary, United States Navy, to the rank of Rear Admiral, and tendering to him the thanks of Congress.

An act for the establishment of marine schools, and for other purposes.

Joint resolution authorizing the President to invite foreign countries to participate in the Panama-Pacific International Exposition in 1915, at San Francisco, Cal.

An act to promote the safety of employees and travelers upon railroads by compelling common carriers engaged in interstate commerce to equip their locomotives with safe and suitable boilers and appurtenances thereto.

Among the more important measures which failed of enactment at the third session were the following:

The Ship Subsidy bill, which passed the Senate by the casting vote of the Vice-President.

The Sulloway Service Pension bill, which involved an increase in the annual pension appropriation estimated at $45,000,000. It passed the House and was attached as a rider to the Pension Appropriation bill in the Senate, to be thrown out on a point of order by Senator Lodge of Mass.

The Permanent Tariff Commission bill, which passed both Houses, but died because of the failure of the House to act upon certain Senate amendments.

The bills admitting the territories of Arizona and New Mexico to statehood. The vote against the Arizona constitution was 47 to 49 in the Senate, chiefly due to its provision for the recall of judges. The New Mexico constitution went down with that of Arizona, in consequence of a filibustering movement on the part of Senator Owen of Oklahoma.

The bill proposing a constitutional amendment for the election of United States Senators by popular vote. (See VIII, *Popular Government.*)

The bill for the reapportionment of Congress, increasing the number of members of the House of Representatives from 391 to 433; it passed the House Feb. 9, and failed of consideration in the Senate on the objection of Senator Root of New York.

The Canadian Reciprocity bill, which passed the House by a vote of 221 to 92, but upon which a vote was never reached in the Senate.

The bill to increase the salaries of Justices of the Supreme Court, passed the House; was not reached in the Senate.

The bill to establish a Children's Bureau in the Department of Commerce and Labor, passed the House.

The Scott bill prohibiting dealings in cotton futures, which passed the House at the first regular session.

The Surety Bonding bill, proposing that the government shall bond its accounting officers.

All the important mining legislation proposed, except the bill for validating the claims of good faith locators of oil and gas lands.

THE SIXTY-SECOND CONGRESS

Organization of the House.—The House of Representatives of the Sixty-second Congress was organized April 4, in special session called by President Taft to consider Canadian reciprocity. The program arranged by two caucuses of the Democratic members was carried through without friction. At the first caucus, Hon. Champ Clark of Missouri was unanimously chosen for Speaker. The same caucus named the following 14 Democratic members of the Committee of Ways and Means: Underwood, Ala., Chairman; Randell, Tex.; Harrison, N. Y.; Brantly, Ga.; Shackleford, Mo.; Kitchin, N. C.; James, Ky.; Rainey, Ill.; Dixon, Ind.; Hughes, N. J.; Hull, Tenn.; Hammond, Minn.; Peters, Mass.; Palmer, Pa.

This Committee was given the unprecedented power of naming all the remaining committees, thus depriving the Speaker of an authority he has possessed since the foundation of the Government. This action had the cordial support of Speaker Clark. The Committee abolished four of the old but useless standing committees, and selected the following chairmen of the remainder:

Accounts.—James T. Lloyd, Mo.
Agriculture.—John Lamb, Va.
Alcoholic Liquor Traffic.—Ezekiel S. Candler, Jr., Miss.
Appropriations.—John J. Fitzgerald, N. Y.
Banking and Currency.—Arsène P. Pujo, La.
Census.—William C. Houston, Tenn.
Claims.—Edward W. Pou, N. C.
Coinage, Weights and Measures.—Thomas W. Hardwick, Ga.
Disposition of Useless Executive Papers.—Joshua F. C. Talbott, Md.
District of Columbia.—Ben Johnson, Ky.
Education.—Asbury F. Lever, S. C.

Election of President, etc.—William W. Rucker, Mo.
Elections No. 1.—Timothy T. Ansberry, O.
Elections No. 2.—James A. Hamill, N. J.
Elections No. 3.—Henry M. Goldfogle, N. Y.
Enrolled Bills.—Ben Cravens, Ark.
Expenditures in Department of Agriculture.—Ralph W. Moss, Ind.
Expenditures in Department of Commerce and Labor.—John H. Rothermel, Pa.
Expenditures in Interior Department.—James M. Graham, Ill.
Expenditures in Department of Justice.—Jack Beall, Tex.
Expenditures in Navy Department.—Rufus Hardy, Tex.
Expenditures in Post Office Department.—William A. Ashbrook, O.
Expenditures on Public Buildings.—Cyrus Cline, Ind.
Expenditures in State Department.—Courtney W. Hamlin, Mo.
Expenditures in Treasury Department.—William E. Cox, Ind.
Expenditures in War Department.—Harvey Helm, Ky.
Foreign Affairs.—William Sulzer, N. Y.
Immigration and Naturalization.—John L. Burnett, Ala.
Indian Affairs.—John H. Stephens, Tex.
Industrial Arts and Expositions.—J. Thomas Heflin, Ala.
Insular Affairs.—William A. Jones, Va.
Interstate and Foreign Commerce.—William C. Adamson, Ga.
Invalid Pensions.—Isaac R. Sherwood, O.
Irrigation of Arid Lands.—William R. Smith, Tex.
Judiciary.—Henry D. Clayton, Ala.
Labor.—William B. Wilson, Pa.
Library.—James L. Slayden, Tex.
Merchant Marine and Fisheries.—Joshua W. Alexander, Mo.
Mileage.—Robert E. Lee, Pa.
Military Affairs.—James Hay, Va.
Mines and Mining.—Martin D. Foster, Ill.
Naval Affairs.—Lemuel P. Padgett, Tenn.
Patents.—William A. Oldfield, Ark.
Pensions.—William Richardson, Ala.
Post Office and Post Roads.—John A. Moon, Tenn.
Printing.—David E. Finley, S. C.
Public Buildings and Grounds.—Morris Sheppard, Tex.
Public Lands.—Joseph T. Robinson, Ark.
Railways and Canals.—Charles A. Korbly, Ind.
Reform in the Civil Service.—Hannibal L. Godwin, N. C.
Revision of the Laws.—John T. Watkins, La.
Rivers and Harbors.—Stephen M. Sparkman, Fla.
Rules.—Robert L. Henry, Tex.
Territories.—Henry D. Flood, Va.
War Claims.—Thetus W. Sims, Tenn.
Ways and Means.—Oscar W. Underwood, Ala.

Of these sixty-six chairmen, forty are from the South (including Maryland and Missouri in the category), a predominance to which they were entitled by seniority of service in nearly every instance. The remaining members of the more important committees are:

Appropriations.—Representatives Burleson, Tex., Sherley, Ky., Bartlett, Ga., Johnson, S. C., Page, N. C., Saunders, Va., McHenry, Pa., Byrns, Tenn., Rausch, Ind., Sisson, Miss., Kinkead, N. J., Cox, Ohio, and Borland, Mo.
Judiciary.—Representatives Henry, Tex., Webb., N. C., Carlin, Va., Rucker, Mo., Houston, Tenn., Floyd, Ark., Thomas, Ky., Graham, Ill., Dupree, La., Littleton, N. Y., McCoy, N. J., Davis, W. Va., and McGillicuddy, Me.
Foreign Affairs.—Flood, Va., Garner, Tex., Legare, S. C., Sharp, Ohio, Cline, Ind., Levy, N. Y., Curley, Mass., Linthicum, Md., Difenderfer, Pa., Goodwin, Ark., Stedman, N. C., Townsend, N. J., Harrison, Miss.

House Rules.—The new House rules include all the amendments adopted by the 61st Congress by the combined votes of Democrats and insurgent Republicans, with some additions. (See VIII, *Reform of the Rules of Congress.*) The most important of these is the reënactment of the so-called Holman amendment of the 44th Congress, which permits general legislation on any and all appropriation bills, even to the extent of changing existing law, where the object of the legislation is retrenchment in the annual expenditures of the Government. Under this rule, the salary of any government official can be reduced in an appropriation bill, or the office itself abolished.

Another important new rule provides that no amendment shall be in order to any bill affecting revenue which is not germane to the subject matter on the bill; nor shall any amendment to any item of such bill be in order which does not directly relate to the item in which the

amendment is proposed. This is intended to facilitate schedule by schedule tariff revision, otherwise known as piecemeal revisions; the name of "psh-gun" bills was applied to these measures when William M. Springer was chairman of the Ways and Means Committee in the Democratic Fifty-third Congress.

The House Democratic caucus on April 2 abolished 100 positions connected with that body, for which $182,000 in salaries were voted by the previous Congress. All the remaining house patronage was dispensed by a new Committee of Three, on "organization on the allotment" basis, or *pro rata* among the states.

The Republican caucus chose James R. Mann, Ill., minority floor leader. The Republican members on the more important committees are as follows:

Ways and Means.—Payne, N. Y., Dalzell, Pa., McCall, Mass., Hill, Conn., Needham, Cal., Fordney, Mich., and Longworth, Ohio.
Appropriations.—Cannon, Ill., Bingham, Pa., Gillett, Mass., Taylor, Ohio, Malby, N. Y., Dwight, N. Y., and Good, Iowa.
Judiciary.—Sterling, Ill., Moon, Pa., Higgins, Conn., Howland, Ohio, Nye, Minn., Norris, Neb., and Dodds, Mich.
Foreign Affairs.—Foster, Vt., McKinley, Ill., Cooper, Wis., Wood, N. J., Bartholdt, Mo., Fairchild, N. Y., and Kendall, Iowa.

Senate Organization.—The chairmen of the principal Senate committees are as follows:

Agriculture and Forestry.—Henry E. Burnham, N. H.
Appropriations.—Francis E. Warren, Wyo.
Conservation of National Resources.—Joseph M. Dixon, Mon.
Education and Labor.—William E. Borah, Idaho.
Finance.—Boies Penrose, Pa.
Foreign Relations.—Shelby M. Cullom, Ill.
Immigration.—Henry Cabot Lodge, Mass.
Interstate Commerce.—Moses E. Clapp, Minn.
Judiciary.—Clarence D. Clark, Wyo.
Military Affairs.—Henry A. du Pont, Del.
Naval Affairs.—George C. Perkins, Cal.
Patents.—Morris Brown, Neb.
Pensions.—Porter J. McCumber, N. D.
Post Offices.—Jonathan Bourne, Jr., Ore.
Printing.—Reed Smoot, Utah.
Privileges and Elections.—William P. Dillingham, Vt.
Public Buildings and Grounds.—George Sutherland, Utah.
Public Lands.—Knute Nelson, Minn.
Rules.—W. Murray Crane, Mass.

First Session.—The more important legislation of the first session of the Sixty-second Congress included the following:

An act to admit the Territories of New Mexico and Arizona as states into the Union on an equal footing with the original states. (See XII, *Territories and Dependencies.*)

An act to amend an act entitled "An act providing for publicity of contributions made for the purpose of influencing elections at which Representatives in Congress are elected," and extending the same to candidates for nomination and election to the offices of Representative and Senator in the Congress of the United States and limiting the amount of campaign expenses. (See VIII, *Popular Government.*)

An act for the apportionment of Representatives in Congress among the several states under the Thirteenth Census. (See VIII, *Apportionment.*)

An act to promote reciprocal trade relations with the Dominion of Canada, and for other purposes. (See IV, *Reciprocity*, etc.)

The more important measures introduced in the first session of the Sixty-second Congress which failed of passage include the following:

An act to establish a Department of Health.

An act to regulate the business of loaning money on security of any kind by persons, firms, and corporations other than national banks, licensed bankers, trust companies, savings banks, building and loan associations, pawnbrokers, and real estate brokers in the District of Columbia.

An act to alter the regulations respecting the manner of holding elections for Senators. (See VIII, *Popular Government.*)

An act to prevent the sale or transportation in interstate or foreign commerce of articles of food held in

cold storage for more than a specified time.

An act to establish in the Department of Commerce and Labor a bureau to be known as the Children's Bureau.

An act to place on the free list agricultural implements, cotton bagging, cotton ties, leather, boots and shoes, fence wire, meats, cereals, flour, bread, timber, lumber, sewing machines, salt, and other articles. (See IV, *The Tariff.*)

An act to reduce the duties on wool and manufactures of wool. (*ibid.*)

An act to reduce the duties on manufactures of cotton. (*ibid.*)

An act to provide a parcels post on rural and star routes in the United States.

An act to enlarge the jurisdiction of the Interstate Commerce Commission by giving to that body the power to fix reasonable rates, based upon physical valuations, to be charged by railroad, express, telegraph, and telephone companies and all other common carriers, in the transaction of interstate business, and also giving to said commission the power to fix reasonable prices to be charged by persons or corporations when found to be exercising a monopoly in the interstate sale of any commodity.

The Senate

[Senators are elected by the state legislatures for a term of six years. Salary, $7,500 per year and mileage.]

[Republicans in Roman (50); Democrats in *italics* (40); vacancy, 1.]

ALABAMA

Term expires.
1915. *Jos. F. Johnston.*
1913. *John H. Bankhead.*

ARKANSAS

1915. *James P. Clarke.*
1913. *Jeff Davis.*

CALIFORNIA

1915. George C. Perkins.
1917. John D. Works.

COLORADO

1915. —— ——.
1913. Simon Guggenheim.

CONNECTICUT

1915. Frank B. Brandegee.
1917. George Payne McLean.

DELAWARE

Term expires.
1913. Harry A. Richardson.
1917. Henry A. du Pont.

FLORIDA

1915. *Duncan U. Fletcher.*
1917. *Nathan P. Bryan.*

GEORGIA

1915. *Hoke Smith.*
1913. *Augustus O. Bacon.*

IDAHO

1913. Wm. E. Borah.
1915. Weldon B. Heyburn.

ILLINOIS

1913. Shelby M. Cullom.
1915. William Lorimer.

INDIANA

1915. *Ben. F. Shively.*
1917. *John W. Kern.*

IOWA

1915. A. B. Cummins.
1913. William S. Kenyon.

KANSAS

1915. Joseph L. Bristow.
1913. Charles Curtis.

KENTUCKY

1913. *T. H. Paynter.*
1915. Wm. O. Bradley.

LOUISIANA

1913. *Murphy J. Foster.*
1915. *John R. Thornton.*

MAINE

1913. *Obadiah Gardner.*
1917. *Charles Fletcher Johnson.*

MARYLAND

1915. *John W. Smith.*
1917. *Isidor Rayner.*

MASSACHUSETTS

1913. W. Murray Crane.
1917. Henry Cabot Lodge.

MICHIGAN

1913. W. A. Smith.
1917. Charles E. Townsend.

MINNESOTA

1913. Knute Nelson.
1917. Moses Edwin Clapp.

MISSISSIPPI

1913. *Le Roy Percy.*
1917. *John Sharp Williams.*

MISSOURI

Term expires.
1915. *William J. Stone.*
1917. *James A. Reed.*

MONTANA

1913. Joseph M. Dixon.
1917. *Henry L. Myers.*

NEBRASKA

1913. Norris Brown.
1917. *Gilbert M. Hitchcock.*

NEVADA

1915. *Francis G. Newlands.*
1917. George S. Nixon.

NEW HAMPSHIRE

1913. Henry E. Burnham.
1915. Jacob H. Gallinger.

NEW JERSEY

1913. F. O. Briggs.
1917. *James E. Martine.*

NEW YORK

1915. Elihu Root.
1917. *James A. O'Gorman.*

NORTH CAROLINA

1913. *Furnifold McL. Simmons.*
1915. *Lee S. Overman.*

NORTH DAKOTA

1915. Alse J. Gronna.
1917. Porter J. McCumber.

OHIO

1915. Theodore E. Burton.
1917. *Atlee Pomerene.*

OKLAHOMA

1915. *Thomas P. Gore.*
1913. *Robt. L. Owen.*

OREGON

1913. Jonathan Bourne, Jr.
1915. *George E. Chamberlain.*

PENNSYLVANIA

1915. Boies Penrose.
1917. George T. Oliver.

RHODE ISLAND

1913. George Peabody Wetmore.
1917. Henry F. Lippitt.

SOUTH CAROLINA

1913. *Benj. R. Tillman.*
1915. *Ellison D. Smith.*

SOUTH DAKOTA

1915. Coe I. Crawford.
1913. Robt. J. Gamble.

TENNESSEE

Term expires.
1913. *Robt. L. Taylor.*
1917. *Luke Lea.*

TEXAS

1913. *Jos. W. Bailey.*
1917. *Charles A. Culberson.*

UTAH

1915. Reed Smoot.
1917. Geo. Sutherland.

VERMONT

1915. William P. Dillingham.
1917. Carroll S. Page.

VIRGINIA

1913. *Thomas S. Martin.*
1917. *Claude A. Swanson.*

WASHINGTON

1915. Wesley L. Jones.
1917. Miles Poindexter.

WEST VIRGINIA

1913. *Clarence W. Watson.*
1917. *Wm. E. Chilton.*

WISCONSIN

1915. Isaac Stephenson.
1917. Robert M. La Follette.

WYOMING

1913. Francis E. Warren.
1917. Clarence D. Clark.

House of Representatives

[Republicans in roman (160); Democrats in *italic* (229); Socialist in SMALL CAPS (1); vacancy, 1. Those marked * served in the Sixty-first Congress. Those marked † served in a previous House. Whole number, 391. Democratic majority, 67.]

ALABAMA

1. *George W. Taylor.**
2. *S. H. Dent, Jr.**
3. *Henry D. Clayton.**
4. *F. L. Blackmon.*
5. *J. Thomas Heflin.**
6. *Richmond Pearson Hobson.**
7. *John L. Burnett.**
8. *William Richardson.**
9. *Oscar W. Underwood.**

ARKANSAS

1. *Robert Bruce Macon.**
2. *William A. Oldfield.**
3. *John C. Floyd.**
4. *Ben Cravens.**
5. *H. M. Jacoway.*
6. *Joe T. Robinson.**
7. *W. S. Goodwin.*

CALIFORNIA

1. *John E. Raker.*
2. William Kent.
3. Joseph R. Knowland.*
4. Julius Kahn.*
5. Everis A. Hayes.*
6. James Carson Needham.*
7. William D. Stephens.
8. Sylvester C. Smith*

COLORADO

AT LARGE—*Edward T Taylor.**

1. *Atterson W. Rucker.**
2. *John A. Martin.**

CONNECTICUT

AT LARGE—John Q. Tilson.*

1. E. Stevens Henry.*
2. *Thomas L. Reilly.*
3. Edwin W. Higgins.*
4. Ebenezer J. Hill.*

DELAWARE

AT LARGE

William H. Heald.*

FLORIDA

1. *Stephen M. Sparkman.**
2. *Frank Clark.**
3. *Dannitte H. Mays.**

GEORGIA

1. *Charles G. Edwards.**
2. *S. A. Roddenbery.**
3. *Dudley M. Hughes.**
4. *William C. Adamson.**
5. *William S. Howard.*
6. *Charles L. Bartlett.**
7. *Gordon Lee.**
8. *Samuel J. Tribble.*
9. *Thomas M. Bell.**
10. *Thomas W. Hardwick.**
11. *William G. Brantley.**

IDAHO

Burton L. French.†

ILLINOIS

1. Martin B. Madden.*
2. James R. Mann.*
3. William W. Wilson.*
4. *James T. McDermott.**
5. *Adolph J. Sabath.**
6. *Edmund T. Stack.*
7. *Frank Buchanan.*
8. *Thomas Gallagher.**
9. *Lynden Evans.*
10. George Edmund Foss.*
11. Ira C. Copley.
12. Charles E. Fuller.*
13. John C. McKenzie.
14. James McKinney.*
15. George W. Prince.*
16. *Claude U. Stone.*
17. John A. Sterling.*
18. Joseph G. Cannon.*
19. William B. McKinley.*
20. *Henry T. Rainey.**
21. *James M. Graham.**
22. Wm. A. Rodenberg.*
23. *Martin D. Foster.**
24. *H. Robert Fowler.*
25. Napoleon B. Thistlewood.*

INDIANA

1. *John W. Boehne.**
2. *William A. Cullop.**
3. *William E. Cox.**
4. *Lincoln Dixon.**
5. *Ralph W. Moss.**
6. *Finley P. Gray.*
7. *Charles A. Korbly.**
8. *John A. M. Adair.**
9. *Martin A. Morrison.**
10. Edgar D. Crumpacker.*
11. *George W. Rauch.**
12. *Cyrus Cline.**
13. *Henry A. Barnhart.**

IOWA

1. Charles A. Kennedy.*
2. *I. S. Pepper.*
3. Charles E. Pickett.*
4. Gilbert N. Haugen.*
5. James W. Good.*
6. N. E. Kendall.*
7. S. F. Prouty.
8. H. M. Towner.
9. William R. Green.
10. Frank P. Woods.*
11. Elbert H. Hubbard.*

KANSAS

1. Daniel R. Anthony, Jr.*
2. *Joseph A. Taggart.*
3. Philip P. Campbell.*
4. Frederick S. Jackson.
5. R. R. Rees.
6. I. D. Young.
7. ———— ————.
8. Victor Murdock.*

KENTUCKY

1. *Ollie M. James.**
2. *Augustus O. Stanley.**
3. *R. Y. Thomas, Jr.**
4. *Ben Johnson.**
5. *Swagar Sherley.**
6. *Arthur B. Rouse.*
7. *James C. Cantrill.**
8. *Harvey Helm.**
9. *W. J. Fields.*
10. John W. Langley.*
11. Caleb Powers.

LOUISIANA

1. *Albert Estopinal.**
2. *H. Garland Dupre.*
3. *Robert F. Broussard.**
4. *John T. Watkins.**
5. *Joseph E. Ransdell.**
6. *Robert C. Wickliffe.**
7. *Arsène P. Pujo.**

MAINE

1. Asher C. Hinds.
2. *Daniel J. McGillicuddy.*
3. *Samuel W. Gould.*
4. Frank E. Guernsey.*

MARYLAND

1. *James Harry Covington.**
2. *Joshua F. C. Talbott.**
3. *George Konig.*
4. *J. Charles Linthicum.*
5. Thomas Parran.
6. *David J. Lewis.*

MASSACHUSETTS

1. George P. Lawrence.*
2. Frederick H. Gillett.*
3. *John A. Thayer.*
4. William H. Wilder.
5. Butler Ames.*
6. Augustus P. Gardner.*
7. Ernest W. Roberts.*
8. Samuel W. McCall.*
9. *William F. Murray.*
10. *James M. Curley.*
11. *Andrew J. Peters.**
12. John W. Weeks.*
13. William S. Greene.*
14. Robert O. Harris.

MICHIGAN

1. *Frank E. Doremus.*
2. William W. Wedemeyer.
3. J. M. C. Smith.
4. Edward L. Hamilton.*
5. *Edwin F. Sweet.*
6. Samuel W. Smith.*
7. Henry McMorran.*
8. Joseph W. Fordney.*
9. James C. McLaughlin.*
10. George A. Loud.*
11. Francis H. Dodds.*
12. H. Olin Young.*

MINNESOTA

1. Sidney Anderson.
2. *W. S. Hammond.**
3. Charles R. Davis.*
4. Frederick C. Stevens.*
5. Frank M. Nye.*
6. Charles A. Lindbergh.*
7. Andrew J. Volstead.*
8. Clarence B. Miller.*
9. Halvor Steenerson.*

MISSISSIPPI

1. *Ezekiel S. Candler, Jr.**
2. *H. D. Stephens.*
3. *Benjamin G. Humphreys.**
4. *Thomas Upton Sisson.**
5. *S. A. Witherspoon.*
6. *B. P. Harrison.*
7. *William A. Dickson.**
8. *James William Collier.**

MISSOURI

1. *James T. Lloyd.**
2. *William W. Rucker.**
3. *Joshua W. Alexander.**
4. *Charles F. Booher.**
5. *William P. Borland.**
6. *Clement C. Dickinson.**
7. *Courtney W. Hamlin.**
8. *Dorsey W. Shackleford.**
9. *Champ Clark.**
10. Richard Bartholdt.*
11. Theron F. Catlin.
12. L. C. Dyer.
13. *Walter L. Hensley.*
14. *Joseph J. Russell.*†
15. *J. A. Daugherty.*
16. *Thomas L. Rubey.*

MONTANA

AT LARGE

Charles N. Pray.*

NEBRASKA

1. *John A. Maguire.**
2. *C. O. Lobeck.*
3. *Daniel V. Stephens.*
4. Charles H. Sloan.
5. George W. Norris.*
6. Moses P. Kinkaid.*

NEVADA

AT LARGE

Edwin E. Roberts.

NEW HAMPSHIRE

1. Cyrus A. Sulloway.*
2. Frank D. Currier.*

NEW JERSEY

1. William J. Browning.
2. John J. Gardner.*
3. *Thomas J. Scully.*
4. Ira W. Wood.*
5. *William B. Tuttle, Jr.*
6. *William Hughes.**
7. *E. W. Townsend.*
8. *Walter I. McCoy.*
9. *Eugene F. Kinkead.**
10. *James A. Hamill.**

NEW YORK

1. *Martin W. Littleton.*
2. *George H. Lindsay.**
3. *James P. Maher.*
4. *Frank E. Wilson.*†
5. *William C. Redfield.*
6. William M. Calder.*
7. *John J. Fitzgerald.**
8. *Daniel J. Riordan.**
9. *Henry M. Goldfogle.**
10. *William Sulzer.**
11. *Charles V. Fornes.**
12. *Michael F. Conry.**
13. *Jefferson M. Levy.*†
14. *John J. Kindred.*
15. *Thomas G. Patten.*
16. *Francis Burton Harrison.**
17. *Henry George, Jr.*
18. *Steven B. Ayres.*
19. John E. Andrus.*
20. Thomas W. Bradley.*
21. *Richard E. Connell.*
22. William H. Draper.*
23. Henry S. De Forest.
24. George W. Fairchild.*
25. Theron Akin.
26. George R. Malby.*
27. *Charles A. Talcott.*
28. Luther W. Mott.
29. Michael E. Driscoll.*
30. John W. Dwight.*
31. Sereno E. Payne.*
32. Henry G. Danforth.
33. *Edwin C. Underhill.*
34. James S. Simmons.*
35. *Daniel A. Driscoll.**
36. *Charles B. Smith.*
37. Edward B. Vreeland.*

NORTH CAROLINA

1. *John H. Small.**
2. *Claude Kitchin.**
3. *James M. Faison.*

4. *Edward W. Pou.**
5. *Charles M. Stedman.*
6. *Hannibal L. Godwin.**
7. *Robert N. Page.**
8. *R. L. Doughton.*
9. *Edwin Y. Webb.**
10. *John M. Gudger.†*

NORTH DAKOTA

AT LARGE

L. B. Hanna.*
H. T. Helgeson.

OHIO

1. Nicholas Longworth.*
2. *Alfred G. Allen.*
3. *James M. Cox.**
4. *J. H. Goeke.*
5. *Timothy T. Ansberry.**
6. *Matthew R. Denver.**
7. *J. D. Post.*
8. Frank B. Willis.
9. *Isaac R. Sherwood.**
10. Robert M. Switzer.
11. *H. C. Claypool.*
12. Edward L. Taylor, Jr.*
13. *Carl C. Anderson.**
14. *William G. Sharp.**
15. *George White.*
16. *W. B. Francis.*
17. *William A. Ashbrook.**
18. *J. J. Whitacre.*
19. *E. R. Bathrick.*
20. Paul Howland.*
21. *R. J. Bulkley.*

OKLAHOMA

1. Bird S. McGuire.*
2. Dick T. Morgan.*
3. *James L. Davenport.†*
4. *Charles D. Carter.**
5. *Scott Ferris.**

OREGON

1. Willis C. Hawley.*
2. A. W. Lafferty.

PENNSYLVANIA

1. Henry H. Bingham.*
2. William S. Reyburn.
3. J. Hampton Moore.*
4. Reuben O. Moon.*
5. *Michael Donohue.*
6. George D. McCreary.*
7. Thomas S. Butler.*
8. *Robert E. Difenderfer.*
9. William W. Griest.*
10. John R. Farr.
11. Charles C. Bowman.
12. *Robert E. Lee.*
13. *John H. Rothermel.**
14. W. D. B. Ainey.
15. *William B. Wilson.**
16. *John G. McHenry.**
17. Benjamin K. Focht.*
18. Marlin E. Olmsted.*
19. Jesse L. Hartman.
20. Daniel F. Lafean.*
21. Charles E. Patton.
22. *Curtis H. Gregg.*
23. Thomas S. Crago.
24. Charles Matthews.
25. Arthur L. Bates.*
26. *A. Mitchell Palmer.**
27. J. N. Langham.*
28. Peter M. Speer.
29. Stephen G. Porter.
30. John Dalzell.*
31. James Francis Burke.*
32. Andrew J. Barchfeld.*

RHODE ISLAND

1. *George F. O'Shaunessy.*
2. George H. Utter.

SOUTH CAROLINA

1. *George S. Legare.**
2. *James T. Byrnes.*
3. *Wyatt Aiken.**
4. *Joseph T. Johnson.**
5. *David E. Finley.**
6. *J. Edwin Ellerbe.**
7. *Asbury F. Lever.**

SOUTH DAKOTA

AT LARGE

Charles H. Burke.*
Eben W. Martin.*

TENNESSEE

1. Sam R. Sells.
2. Richard W. Austin.*
3. *John A. Moon.**
4. *Cordell Hull.**
5. *William C. Houston.**
6. *Joseph W. Byrns.**
7. *Lemuel P. Padgett.**
8. *Thetus W. Sims.**
9. *Finis J. Garrett.**
10. *Kenneth D. McKellar.*

TEXAS

1. *Morris Sheppard.**
2. *Martin Dies.**
3. *James L. Young.*
4. *Choice B. Randell.**
5. *Jack Beall.**
6. *Rufus Hardy.**
7. *Alexander W. Gregg.**
8. *John M. Moore.**
9. *George F. Burgess.**
10. *Albert S. Burleson.**
11. *Robert L. Henry.**
12. *Oscar Callaway.*
13. *John H. Stephens.**
14. *James L. Slayden.**
15. *John N. Garner.**
16. *William R. Smith.**

UTAH

AT LARGE

Joseph Howell.*

VERMONT

1. David J. Foster.*
2. Frank Plumley.*

VIRGINIA

1. *William A. Jones.**
2. *Edward E. Holland.*
3. *John Lamb.**
4. *R. Turnbull.**
5. *E. W. Saunders.**
6. *Carter Glass.**
7. *James Hay.**

8. *Charles C. Carlin.**
9. C. Bascom Slemp.*
10. *Henry D. Flood.**

WASHINGTON

1. William E. Humphrey.*
2. Stanton Warburton.
3. William La Follette.

WEST VIRGINIA

1. *John W. Davis.*
2. *William G. Brown.*
3. *Adam C. Littlepage.*
4. *John M. Hamilton.*
5. James A. Hughes.*

WISCONSIN

1. Henry A. Cooper.*
2. John M. Nelson.*
3. Arthur W. Kopp.*
4. William J. Cary.*
5. Victor L. Berger.
6. *M. E. Burke.*
7. John J. Esch.*
8. James H. Davidson.*
9. *Thomas F. Konop.*
10. E. A. Morse.*
11. Irvine L. Lenroot.*

WYOMING

Frank W. Mondell.*

THE FEDERAL JUDICIARY

The United States Supreme Court.—Four vacancies have occurred in the Supreme Court by death since the term of the present administration began. Horace Harmon Lurton, of Tennessee, was appointed Dec. 13, 1909, to the vacancy created by the death of Justice Rufus W. Peckham, of New York. Charles E. Hughes, Governor of New York, was appointed April 25, 1910, to succeed Justice David J. Brewer, of Kansas. Justice Hughes took office Oct. 1, 1910. Chief Justice Fuller, appointed by President Cleveland in 1888, died July 4, 1910. Justice Edward D. White was appointed as his successor Dec. 12, 1910. An act of Congress permitted Justice William H. Moody, of Massachusetts, who has been incapacitated by illness for several years, to retire on full pay, prior to Dec., 1910. He resigned Nov. 22, 1910, and Willis Van Devanter, of Wyoming, was appointed his successor. Judge Joseph Rucker Lamar, of Georgia, was appointed successor to Justice White. Justice John M. Harlan, appointed by President Hayes in 1877, died Oct. 14, 1911. His successor has not been appointed.

UNITED STATES SUPREME COURT

	Born.	App.
Chief Justice, Edward D. White, of Louisiana. Salary, $13,000	1845	1894
Joseph McKenna, of California	1843	1898
Oliver W. Holmes, of Mass	1841	1902
William R. Day, of Ohio	1849	1903
Horace H. Lurton, of Tenn	1844	1909
Charles E. Hughes, of New York	1862	1910
Willis Van Devanter, of Wyo	1859	1910
Joseph Rucker Lamar, of Ky	1857	1910
Term of office—For life. Salary, $12,500.		
Clerk, J. H. McKenney, D. C.		6,000
Marshal, J. M. Wright, Kentucky		3 500
Reporter, Chas. H. Butler, New York		4,500

United States Circuit Courts of Appeals.—The act of March 3, 1891, provides that the chief justice and the associate justices of the Supreme Court assigned to each circuit, and the circuit judges within each circuit, and the several district judges within each circuit, shall be competent to sit as judges of the Circuit Court of Appeals within their respective circuits.

United States Circuit Courts.—There are nine circuit courts in the United States, each presided over by a member of the Supreme Court, with three and four circuit or district judges. The salary of circuit judges is $7,000.

United States District Courts.—United States district judges numbered 91 on July 1, 1911, of whom six were located in Greater New York. The salary of district judges is $7,000.

Circuit and District Judges.—The following table shows the nine judicial circuit districts of the United States courts, together with the names of the Supreme Court justices assigned to the several circuits, and of the district and circuit judges residing in each. The vacancy in the Sixth Circuit will be filled when Justice Harlan's successor is appointed.

First Circuit: Justice Holmes.
Circuit judges: Le Baron B. Colt, William L. Putnam, Francis C. Lowell.
District judges: Maine, Clarence Hale; Massachusetts, Frederic Dodge; New Hampshire, Edgar Aldrich; Rhode Island, Arthur L. Brown.

Second Circuit: Justice Hughes.
Circuit judges: E. Henry Lacombe, Alfred C. Coxe, Henry G. Ward, Walter C. Noyes, Martin A. Knapp (see *Commerce Court*).
District judges: Connecticut, James P. Platt; New York (northern), George W. Ray; New York (southern), ———, ———, George C. Holt, Chas. M. Hough, Learned Hand; New York (eastern), Thomas Ives Chatfield, Van Vechten Veeder;

New York (western), John R. Hazel; Vermont, James L. Martin.

Third Circuit: Justice Lurton.

Circuit judges: George Gray, Joseph Buffington, William M. Lanning, Robert W. Archbald (see *Commerce Court*).

District judges: Delaware, Edward G. Bradford; New Jersey, Joseph Cross, John Relistab; Pennsylvania (eastern), John B. McPherson, James B. Holland; Pennsylvania (middle), Chas. B. Witmer; Pennsylvania (western), James S. Young, Chas. P. Orr.

Fourth Circuit: Chief Justice White.

Circuit judges: Nathan Goff, Jeter C. Pritchard.

District judges: Maryland, Thomas J. Morris, John C. Rose; North Carolina (eastern), Henry G. Connor; North Carolina (western), Jas. Edmund Boyd; South Carolina, Henry A. M. Smith; Virginia (eastern), Edmund Waddill, Jr.; Virginia (western), H. Clay McDowell; West Virginia (northern), Alston G. Dayton; West Virginia (southern), Benjamin F. Keller.

Fifth Circuit: Justice Lamar.

Circuit judges: Don A. Pardee, Andrew P. McCormick, David D. Shelby.

District judges: Alabama (northern), William I. Grubb; Alabama (middle and northern), Thomas G. Jones; Alabama (southern), Harry T. Toulmin; Florida (northern), Wm. B. Sheppard; Florida (southern), James W. Locke; Georgia (northern), William T. Newman; Georgia (southern), Emory Speer; Louisiana (eastern), Rufus E. Foster; Louisiana (western), Aleck Boarman; Mississippi (northern and southern), Henry C. Niles; Texas (northern), Edward R. Meek; Texas (southern), Waller T. Burns; Texas (eastern), Gordon Russell; Texas (western), Thomas S. Maxey.

Sixth Circuit: ——— ———.

Circuit judges: ——— ———, John W. Warrington, Arthur C. Denison.

District judges: Kentucky (eastern), ——— ———; Kentucky (western), Walter Evans; Michigan (eastern), Alexis C. Angell; Michigan (western), C. W. Sessions; Ohio (northern), John M. Killits, Wm. L. Day; Ohio (southern), John E. Sater, Howard C. Hollister; Tennessee (eastern and middle), Edward T. Sanford; Tennessee (western), John E. McCall.

Seventh Circuit: Justice Day.

Circuit judges: ——— ———, Francis E. Baker, William H. Seaman, Christian C. Kohlsaat, Julian W. Mack (see *Commerce Court*).

District judges: Illinois (northern), Kenesaw M. Landis, George A. Carpenter; Illinois (eastern), Francis M. Wright; Illinois (southern), J. Otis Humphrey; Indiana, Albert B. Anderson; Wisconsin (eastern), ——— ———; Wisconsin (western), Arthur L. Sanborn.

Eighth Circuit: Justice Van Devanter.

Circuit judges: Walter H. Sanborn, Walter I. Smith, William C. Hook, Elmer B. Adams, John E. Carland (see *Commerce Court*).

District judges: Arkansas (eastern), Jacob Trieber; Arkansas (western), Frank A. Youmans; Colorado, Robert E. Lewis; Iowa (northern), Henry Thomas Reed; Iowa (southern), Smith McPherson; Kansas, John C. Pollock; Minnesota, Page Morris, Charles A. Willard; Missouri (eastern), David P. Dyer; Missouri (western), Arba S. Van Valkenburgh; Nebraska, William H. Munger, Thomas C. Munger; North Dakota, Charles F. Amidon; Oklahoma (eastern), Ralph E. Campbell; Oklahoma (western), John H. Cotteral; South Dakota, James D. Elliott; Utah, John A. Marshall; Wyoming, John A. Riner; New Mexico, William H. Pope, chief justice; John R. McFie, associate justice; Frank W. Parker, associate justice; Ira A. Abbott, associate justice; Edward R. Wright, associate justice; Merritt C. Mechem, associate justice; C. J. Roberts, associate justice.

Ninth Circuit: Justice McKenna.

Circuit judges: William B. Gilbert, Erskine M. Ross, William W. Morrow, William H. Hunt (see *Commerce Court*).

District judges: California (northern), John J. De Haven, William C. Van Fleet; California (southern), Olin Wellborn; Idaho, Frank S. Dietrich; Montana, ——— ———; Nevada, Edward S. Farrington; Oregon, Charles E. Wolverton, Robert S. Bean; Washington (eastern), Frank H. Rudkin; Washington (western), Cornelius H. Hanford, George Donworth. Alaska: Thomas R. Lyons, Div. No. 1; Cornelius D. Murane, Div. No. 2; Edward E. Cushman, Div. No. 3; Peter D. Overfield, Div. No. 4. Arizona: Edward Kent, chief justice; Fletcher M. Doan, associate justice; John H. Campbell, associate justice; Edward M. Doe, associate justice; Ernest W. Lewis, associate justice. Hawaii: Alexander G. M. Robertson, chief justice; Antonio Perry, associate justice; John T. De Bolt, associate justice; Henry

E. Cooper, judge first circuit; Wm. L. Whitney, judge first circuit; Wm. J. Robinson, judge first circuit; Selden B. Kingsbury, judge second circuit; John A. Matthewman, judge third circuit; Charles F. Parsons, judge fourth circuit; J. Hardy, judge fifth circuit; Sanford B. Dole, United States district judge; Charles F. Clemons, United States district judge.

Court of Claims:

Chief Justice: Stanton J. Peelle, Indiana; Charles B. Howry, Mississippi; Fenton W. Booth, Illinois; Geo. W. Atkinson, West Virginia; Samuel S. Barney, Wisconsin.

Territorial Judges:

District judges.—Alaska: Division No. 1, Thomas R. Lyons; Division No. 2, Cornelius D. Murane; Division No. 3, Edward E. Cushman; Division No. 4, Peter D. Overfield.

Circuit Court—First circuit: Henry E. Cooper, Wm. L. Whitney, William J. Robinson; Second circuit, Selden B. Kingsbury; Third circuit, John A. Matthewman; Fourth circuit, Charles F. Parsons; Fifth circuit, J. Hardy. United States District judges (term six years), Sanford B. Dole, Charles F. Clemons.

Supreme Court—Arizona: Chief Justice, Edward Kent; Associate justices, Fletcher M. Doan, John H. Campbell, Ernest W. Lewis, Edward M. Doe.

Supreme Court—Hawaii: Chief Justice, Alexander G. M. Robertson; Associate justices, Antonio Perry, John T. De Bolt.

Supreme Court—New Mexico: Chief justice, William H. Pope, Roswell; Associate justices; John R. McFie, Santa Fe; Frank W. Parker, Las Cruces; Ira A. Abbott, Albuquerque; Merritt C. Mechem, Socorro; Edward R. Wright, Alamogordo; C. J. Roberts, Las Vegas.

Supreme Court—Porto Rico: Chief justice, José C. Hernandez y Usera; Associate justices, James H. McLeary, Adolf Grant Wolf, Emilio del Toro y Cuevas, Pedro De Aldrey; United States district judge, ——— ———; attorney-general, Foster V. Brown.

Judges of the District of Columbia:

Court of Appeals: Chief Justice, Seth Shepard; Associate justices, Charles H. Robb, Josiah A. Van Orsdel.

Supreme Court: Chief Justice, Harry M. Clabaugh; Associate justices, Job Barnard, Thomas H. Anderson, Ashley M. Gould, Daniel Thew Wright, Wendell P. Stafford.

Commerce Court.—A court to be known as the Commerce Court, and having jurisdiction (heretofore possessed by circuit courts) over all cases for the enforcement of any order of the interstate commerce commission, other than for the payment of money, was established by Congress in 1909. The Commerce Court sits in Washington. Its members are additional circuit judges, with a salary of $7,000 each. They were appointed as follows:

Presiding judge: Martin A. Knapp, Dec. 20, 1910, for five years.

Associate judges: Robert W. Archbald, Jan. 31, 1911, for four years.

William H. Hunt, Jan. 31, 1911, for three years.

John Emmett Carland, Jan. 31, 1911, for two years.

Julian W. Mack, Jan. 31, 1911, for one year.

Court of Customs Appeals.—The tariff act of 1909 created a new court to hear appeals in custom cases to be called the Court of Customs Appeals, which is constituted as follows:

Presiding judge: Robert M. Montgomery, Michigan.

Associate judges: James F. Smith, California; Orion M. Barber, Vermont; Marion De Vries, California; George E. Martin, Ohio.

THE CONSULAR SERVICE

The consular service of the United States was reorganized by act of Congress of May 11, 1908. Under this reorganization there are fifty-seven consuls general, divided into seven classes, the salaries being as follows:

Class 1	Salary $12,000	One at London and at Paris.
" 2	" 8,000	Six, located at Berlin, Habana, Hamburg, Hongkong, Rio de Janeiro, and Shanghai.
" 3	" 6,000	Eight, located at Calcutta, Cape Town, Constantinople, Mexico City, Montreal, Ottawa, Vienna, and Yokohama.
" 4	" 5,500	Twelve in all.
" 5	" 4,500	Seventeen in all.
" 6	" 3,500	Nine in all.
" 7	" 3,000	Three in all.

Consuls.—The United States consuls are divided into nine classes, with salaries ranging from $8,000 down to $2,000. There is but one consul of Class 1, located at Liverpool, Eng., at a salary of $8,000, and but one Class 2, at Manchester, Eng., at a salary of $6,000.

There are in all 240 consuls, located in the principal cities of the various countries of the world, and there are, in addition, 255 consular agents.

THE DIPLOMATIC SERVICE

ACCREDITED BY UNITED STATES				ACCREDITED TO UNITED STATES		
Country.		Appointed from				Date of Com.
Ambassadors						
Austria-Hungary	Richard C. Kerens.	Mo.	1909.	Baron Hengelmüller von Hengervár.		1902
Brazil	Irving B. Dudley.	Cal.	1906.	Domicio da Gama.		1911
France	Robert Bacon.	N. Y.	1909.	J. J. Jusserand.		1903
Germany	John G. A. Leishman.	Pa.	1911.	Count J. H. von Bernstorff.		1908
Great Britain	Whitelaw Reid.	N. Y.	1905.	Rt. Hon. James Bryce		1907
Italy	Thomas J. O'Brien.	Mich.	1911.	Marquis Cusani - Confalioneri.		1910
Japan	Charles Page Bryan.	Ill.	1911.	Baron Yasuya Uchida.		1909
Mexico	Henry Lane Wilson.	Wash.	1909.	Señor Don Gilberto Crespo y Martinez.		1911
Russia	Curtis Guild.	Mass.	1911.	George Bakhméteff.		1911
Turkey	William Woodville Rockhill.	D. C.	1911.	Youssouf Zia Pacha.		1910
Ministers Plenipotentiary						
Argentine Republic				Mr. Rómulo S. Naón.		1911
Belgium	Larz Anderson.	D. C.	1911.	Mr. E. Havenith.		1911
Bolivia	Horace G. Knowles.	Del.	1910.	Señor Don Ignacio Calderon.		1904
Chile	Henry P. Fletcher.	Pa.	1909.	Señor Don Eduardo Suárez.		1911
China	Wm. James Calhoun.	Ill.	1909.	Mr. Chang Yin Tang.		1909
Colombia	James T. DuBois.	Pa.	1911.	Señor Gen. Pedro nel Ospina.		1911
Costa Rica	Lewis Einstein.	N. Y.	1911.	Don Joaquin Bernardo Calvo.		1899
Cuba	Arthur M. Beaupré.	Ill.	1911.	Señor Lodo. Antonio Martin Rivero.		1911
Denmark	Maurice Francis Egan.	D. C.	1907.	Count Moltke.		1908
Dominican Republic	Wm. W. Russell.	Md.	1911.	Don Emilio C. Joubert		1909
Ecuador	Evan E. Young.	S. Dak.	1911.	Señor Dr. Don Rafael Maria Arizaga.		1910
Greece and Montenegro	George H. Moses.	N. H.	1909.	Mr. L. A. Coromilas.		1906
Guatemala	R. S. Reynolds Hitt.	Ill.	1910.	Dr. Don Luis Toledo Herrarte.		1907
Haiti	Henry W. Furniss.	Ind.	1905.	Mr. H. Pauleus Sannon.		1909
Honduras	Charles Dunnig White.	N. J.	1911.	Dr. Fausto Davila.		1911
Morocco	Fred Warner Carpenter.	Cal.	1910.			
Netherlands & Luxemburg	Lloyd Bryce.	N. Y.	1911.	Jonkheer J. Loudon.		1908
Nicaragua	Elliott Northcott.	W. Va.	1911.	Salvadore Castrillo.		1910
Norway	Laurits S. Swenson.	Minn.	1911.	M. H. A. Bryn.		1910
Panama	H. Percival Dodge.	Mass.	1911.	Señor Don Juan Brin.		1911
Persia	Charles W. Russell.	D. C.	1909.	Mirza Ali Kuli Khan.		1911
Peru	H. Clay Howard.	Ky.	1911.	Mr. Felipe Pardo.		1905
Portugal	Edwin V. Morgan.	N. Y.	1911.	Viscount de Alte.		1902
Roumania, Servia and Bulgaria	John B. Jackson.	N. J.	1911.			
Salvador	Wm. Heimke.	Kan.	1909.	Don Federico Mejia.		1907
Siam	Hamilton King	Mich.	1903.	Phya Akharaj Varadhara.		1901
Spain	Henry Clay Ide.	Vt.	1909.	Señor Don Juan Riaño y Gayangos.		1910
Sweden	Chas. H. Graves.	Minn.	1905.	Mr. W. A. F. Ekengren.		1911
Switzerland	Henry S. Boutell.	Ill.	1911.	Dr. Paul Ritter.		
Uruguay and Paraguay	Nicolay A. Grevstad.	Ill.	1911.	Dr. Carlos Maria de Pena.		1911
Venezuela	John W. Garrett.	Md.	1910.	Don P. Ezequiel Rojas.		1909
Ministers Resident and Consuls-General						
Liberia	Wm. D. Crum.	S. C.	1910.			

CIVIL SERVICE

CLINTON ROGERS WOODRUFF

National.—One of the most gratifying developments of the year, from the civil-service reform view-point, has been the vigorous attitude of President Taft toward the merit system. On Sept. 30, 1910, he put into the competitive classified service assistant postmasters in post offices of the first and second classes and clerks in non-free delivery offices. This order, which went into effect Dec. 1, affected about 3,800 employees, 2,105 assistant postmasters, and 1,746 clerks in non-free delivery offices. Further than this the President in his annual message urged upon Congress that all local officers under the treasury and interior departments, the post office and the departments of justice, commerce and labor, whose appointments now require confirmation by the Senate, should be classified subject to the same provisions as are applied to persons now in the competitive service, and that upon such classification the advice and consent of the Senate should cease to be required in such appointments. (See Twenty-seventh report, pp. 28-32.) To do this requires further legislation and a bill for this purpose has accordingly been introduced by Senator Burton of Ohio.

Although there is no provision of law which makes necessary the application of merit principles to bank examiners, they are now appointed only after their fitness has been demonstrated by examination prescribed by the comptroller of the currency, and they are required on their appointment to cease all active participation in partisan politics. A striking illustration of the good results flowing from the elimination of political and spoils influences has been afforded by the recent reforms accomplished in the customs service at New York.

On Sept. 16, 1910, a letter to an unknown Republican leader in Iowa, and signed by Secretary Norton, was published, in which it was openly stated that "the President felt it to be his duty to the party and to the country to withhold federal patronage from certain senators and congressmen who seem to be in opposition to the Administration's efforts to carry out the promises of the party platform. The President feels," continued the letter, "that the value of federal patronage has been greatly exaggerated and that the refusal to grant it has probably been more useful to the men affected than the appointments would have been." This frank confession by the President, through his secretary, of the use of the patronage to influence legislation at the time aroused much comment in the press, some extremely unfavorable, but the President's general record on civil-service matters has been so uniformly good that there has been a willingness to condone the letter as an unfortunate break of but slight significance.

In his annual message to Congress in Dec., 1910, the President specifically urged the classification of all first, second and third-class postmasters, the application of the merit system to appointments in the diplomatic and consular services and went further than any other President has gone in stating that in his judgment "public opinion has advanced to the point where it would support a bill providing a secure tenure during efficiency for all purely administrative officials."

To put into effect the recommendations of the President and of his cabinet advisers, bills have been introduced into Congress. Representative Lowden of Illinois on Jan. 11 introduced into the House a bill providing for the application of the merit system to appointments in the diplomatic and consular services, the effect of which would be to make permanent by legislative action a system now dependent entirely upon the discretion of the President. Senator Burton introduced a bill to allow the President to put first, second, and third-class postmasters in the classified service and Senator

Frye introduced another bill making a similar provision for collectors, assistant collectors, surveyors of customs and naval officers in the customs service. Congress, however, did not either at the regular session ending March 4 or at the special session take any action on these measures.

Of the bills introduced into the special session two aroused considerable interest, one introduced by Senator Jones of Washington and the other by Senator La Follette. Both bills provide that employees may not be dismissed except on charges and after having been given an opportunity to make an explanation, and both loosen up the so-called "gag order" embodied in the Executive order of Jan. 31, 1902, as amended Jan. 25, 1906, which forbids all federal officers and employees from soliciting either individually or by associations for an increase of pay, or influencing or attempting to influence any other legislation before Congress except through the heads of the departments under whom they serve. Senator La Follette's bill, however, went even farther, practically making it lawful for federal officeholders to affiliate themselves with organized labor unions.

During the year an inquiry into economy and efficiency in the various departments has been instituted by the President upon authority of Congress. The methods of transacting the public business in the different departments of the government are being examined by experts, under the leadership of Dr. Frederick A. Cleveland, of Philadelphia, Harvey S. Chase, of Boston, William F. Willoughby, former treasurer of Porto Rico, and Professor Frank J. Goodnow, all of whom are actively identified with the National Municipal League and prominent in its councils and on its various committees.

National Assembly of Civil Service Commissions.—On June 7-8, 1911, the National Assembly of Civil Service Commissions, composed of representatives of the various commissions, federal, state and municipal, throughout the country, was held at Madison, Wis., for the purpose of discussing matters of common interest and exchanging views and suggestions. The resolutions adopted declared that public expression should be given to the gratification it feels in the spread of the merit system of appointment as evidenced by its adoption in the service of the nation, of six states and nearly 250 cities; and in the adoption by the State of Illinois of improved civil-service laws extending the operation of the merit system and giving enlarged powers and greater security from improper political interference to its civil service commission; and also satisfaction in the decreasing number of positions exempted from examination and the success attendant upon tests held for highly technical and scientific positions, and heads of departments in cities.

State and Municipal.—Connecticut and Illinois record the most important advances in the merit system in state services during the past year. The Connecticut legislature on April 8 adopted a civil-service law which may be put into effect in any political sub-division of the state by popular vote. At its last session, the Illinois legislature passed four important civil-service laws. One, a state-wide law extending the merit system from the state charitable institutions to the entire state service; the second, a law covering the entire service of Cook County, where previously only employees in the county institutions were classified; third, a law puts under the merit system employees in the parks of Chicago, and a fourth makes it possible to extend the Chicago civil-service law by popular vote to about 250 positions in the municipal courts. The state-wide and Cook County laws were passed as the result of popular vote at the November elections last year, when the advisory "little ballot" in favor of such legislation was adopted by a vote of 411,676 to 121,133, a majority of 290,543.

The new state law is remarkable in that it gives very wide powers to the commission, which is empowered to make rules to carry out the purposes of the act and thus is

granted *quasi*-legislative powers. It may also make rules for examinations, appointments, transfers, removals, for maintaining and keeping records of efficiency of all officers and employees, and all groups of officers and employees, and it may from time to time make changes in such rules. These rules do not require the approval or sanction of any other authority. All persons in the service July 1 become members of the classified civil service without original examination.

Attempts in other states to obtain civil-service legislation were not immediately successful, but ground for advances in future years was laid. A state-wide civil-service law applying to the state and county services was defeated in California, although the legislature was progressive; a bill covering about 6,000 state employees in Pennsylvania and providing for a referendum vote on its adoption in third-class cities and in counties of over 150,000, was defeated in the lower house of the Pennsylvania legislature by the close vote of 87 to 86. Bills putting the state service under the merit system were also defeated in Ohio, Michigan and Minnesota. Governor Wilson's plan for electoral reform in New Jersey embodied in the "Geran bill," adopted at the 1911 session of the legislature, provides for the choice of election officers after non-competitive examinations. An attempt to repeal the Colorado state civil-service law was defeated, but the legislature practically accomplished its purpose by failing to appropriate the necessary funds for the expenses of the state civil-service commission.

In New York State a return of the Democrats to power was immediately followed by a change in the personnel of the state civil-service commission. The two Republican members "resigned." The Democratic member of the commission was retained and made president. Immediately after the appointment of the new commission and at its first meeting, requests were made for the exemption of a large number of positions, most of them in the office of the state comptroller. This was recognized as the beginning of a spoils raid and was with vigor opposed by friends of the merit system, but the requests were granted none the less. The matter, however, was taken into the courts and the action of the commission held to be illegal by Supreme Court Justice Rudd, whose decision in turn was overruled by the Appellate Division. The matter is to be carried to the Court of Appeals. Other requests for exemptions, however, followed, the most important single request being that of the state excise commissioner, who wished to have the 60 special agents in his department exempted. This was denied, but at a meeting in Albany July 27 the state commission granted exemptions of over 60 positions in various other state departments.

New York City's civil service likewise was subjected to a fierce attack through the medium of the "Gaynor" charter which placed the civil service on an entirely new basis; but the resistance was so great that the sponsors of the charter abandoned their effort to change the existing legislation. (See also XI, *Municipal Government.*)

The competitive promotion examination to fill the vacancy made by the resignation of Fire-Chief Croker was considered by civil service reformers the most important competitive examination ever held in this country, and its character and its conduct aroused favorable comment.

In New Jersey the submission to the people of the respective divisions by referendum of the question of adopting the provisions of the state civil-service law for Newark, East Orange and Essex County resulted in the acceptance of the law by large majorities.

Numerous commission charters adopted during the past year contain civil service provisions. With the exception of the Oakland charter, however, the civil service provisions in none of these new charters are at all adequate to accomplish their purpose.

X. STATE, COUNTY, AND TOWN GOVERNMENT

JOHN A. FAIRLIE

THE STATES OF THE UNION

In the following series of tables the more important facts relative to the forty-six states which at present constitute the American Union are brought together for convenient reference:

1. The first table gives the area and population of the states, together with the date upon which they severally ratified the constitution of the United States, or upon which they were admitted to the Union. The population at 1900 and 1910 is given, together with the percentage of increase since 1900, and the rank of the several states in population in 1910.

The population of the continental United States at the thirteenth census, taken April 15, 1910, was announced Dec. 10 as 91,402,151, an increase of 15,977,691 over the population on June 1, 1900, and an increase of 21 per cent. as compared with an increase of 22.7 per cent. in 1900. The states in which the population has increased more than 50 per cent. include Oklahoma, New Mexico, Arizona, Nevada, Washington, Oregon, California, North Dakota, Montana, Wyoming, and Idaho. All these states are situated in the western half of the United States.

Including Alaska, Hawaii, Porto Rico, and military persons abroad, the population was 93,402,151. If the population of the Philippine Islands (7,635,426 in 1903) is added, with estimates for Guam, Samoa, and the Canal, the total population of the United States and possessions is 101,100,000.

The new apportionment of state representatives in Congress is based upon the population as given upon the following page.

2. The second table gives for each state the assessed valuation of property, as made in 1910 or 1911; the total state indebtedness and the amount of sinking funds held against the same; the appropriations for the annual expenses of the state, which, in some cases, indicate the actual revenue of the year; and the total expenditures for the year. The data furnished in this table were courteously supplied by the treasurers or comptrollers of the several states.

3. The third table revises and extends the table on pp. 184-9 of the YEAR BOOK for 1910, which gives the facts in regard to the state constitutions; dates of adoption; methods of ratification of present and former constitutions, and the existing methods of amendment in each state.

4. The fourth table gives the state governors; their politics; the length of the governor's term in each state; the date of the beginning and ending of his term; and the governor's salary.

5. The fifth table presents the main features regarding the state legislatures, including the number of members of each house; length of the term; frequency of session; the limit upon duration of sessions, if any; and the salaries of members of both branches of the legislature.

6. The sixth table indicates the main facts regarding the state judiciary; the name of the courts and number of judges; how chosen; length of term; and salary.

7. The seventh table indicates the number of counties in each state, and the general facts as to the county officers, their titles, which, as a rule, indicate their functions, and whether elected or appointed.

An eighth table appeared in the YEAR BOOK for 1910, giving the census returns of receipts and payments of counties in 1902.

X. STATE, COUNTY, AND TOWN GOVERNMENT

I. THE STATES OF THE UNION

Area, Population, Dates of Ratification, Organization and Order of Admission to the Union

	Ratification of Constitution.	Area.	1900, Population.	1910, Population.	Percentage of Increase 1900–1910.	Rank in Population 1910.
New Hampshire	June 21, 1788	9,031	411,588	430,572	4.6	39
Massachusetts	February 6, 1788	8,039	2,805,346	3,366,410	20.0	6
Rhode Island	May 29, 1790	1,067	428,556	542,610	26.6	38
Connecticut	January 9, 1788	4,820	908,420	1,114,756	22.7	31
New York	July 26, 1788	47,654	7,268,894	9,113,614	25.4	1
New Jersey	December18, 1788	7,514	1,883,669	2,537,167	34.7	11
Pennsylvania	December12, 1787	44,832	6,302,115	7,665,111	21.6	2
Delaware	December 7, 1787	1,965	184,735	202,322	9.5	44
Maryland	April 28, 1788	9,941	1,188,044	1,294,450	9.0	27
Virginia	June 26, 1788	40,262	1,854,184	2,061,612	11.2	20
North Carolina	November21, 1789	48,740	1,893,810	2,206,287	16.5	16
South Carolina	May 23, 1788	30,495	1,340,316	1,515,400	13.1	26
Georgia	January 2, 1788	58,725	2,216,331	2,609,121	17.7	10

	Date of Admission.	Area.	1900, Population.	1910, Population.	Percentage of Increase 1900–1910.	Rank in Population 1910.
Kentucky	February 4, 1791	40,181	2,147,174	2,289,905	6.6	14
Vermont	February 18, 1791	9,124	343,641	355,956	3.6	42
Tennessee	June 1, 1796	41,687	2,020,616	2,184,789	8.1	17
Maine	March 3, 1820	29,895	694,466	742,371	6.9	34
Texas	December 29, 1845	262,398	3,048,710	3,896,543	27.8	5
West Virginia	June 20, 1863	24,022	958,800	1,221,119	27.4	28
Ohio	April 30, 1802	40,740	4,157,545	4,767,121	14.7	4
Louisiana	April 8, 1812	45,409	1,381,625	1,656,388	19.9	24
Indiana	December 11, 1816	35,885	2,516,462	2,700,876	7.3	9
Mississippi	December 10, 1817	46,362	1,551,270	1,797,114	15.8	21
Illinois	December 3, 1818	56,002	4,821,550	5,638,591	16.9	3
Alabama	December 14, 1819	51,279	1,828,697	2,138,093	16.9	18
Missouri	March 2, 1821	68,727	3,106,665	3,293,335	6.0	7
Arkansas	June 15, 1836	52,525	1,311,564	1,574,449	66.2	25
Michigan	January 26, 1836	57,480	2,420,982	2,810,173	16.1	8
Florida	March 3, 1845	54,861	528,542	752,619	42.1	33
Iowa	December 28, 1846	55,586	2,231,853	2,224,771	.3	15
Wisconsin	May 29, 1848	55,256	2,069,042	2,333,860	12.7	13
California	September 9, 1850	156,092	1,485,053	2,377,549	60.1	12
Minnesota	May 11, 1858	80,858	1,751,394	2,075,708	18.5	19
Oregon	February 14, 1859	95,607	413,536	672,765	62.7	35
Kansas	January 29, 1861	81,774	1,470,495	1,690,949	15.0	22
Nevada	March 21, 1864	109,821	42,335	81,875	93.4	46
Nebraska	February 9, 1867	76,808	1,066,300	1,192,214	11.8	29
Colorado	March 3, 1875	103,658	539,700	799,024	48.0	32
North Dakota	February 22, 1889	70,183	319,146	577,056	80.8	37
South Dakota	February 22, 1889	76,868	401,570	583,888	45.4	36
Montana	February 22, 1889	145,776	243,329	376,053	54.5	40
Washington	February 22, 1889	66,836	518,103	1,141,990	120.4	30
Idaho	July 3, 1890	83,779	161,772	325,594	101.3	43
Wyoming	July 10, 1890	97,594	92,531	145,965	57.7	45
Utah	July 16, 1894	82,184	276,749	373,351	34.9	41
Oklahoma	November16, 1907	69,414	790,391	1,657,155	109.7	23

Area.—The total area of continental United States is 2,974,159 square miles. The total area including Alaska and Hawaii is 3,624,122 square miles. The area of Alaska is 590,884 square miles; of the Hawaiian Islands, 6,449 square miles; of the Philippine Islands, 115,026 square miles; and of Porto Rico, 34,035 square miles.

II, STATE INDEBTEDNESS, TAXATION, APPROPRIATIONS, AND EXPENDITURES

States.	Assessed Value of Property.	Tax Rate per $1,000.	Indebtedness.	Sinking Funds or Surplus.	Appropriations or Amount of Taxes.	Expenditures.
Alabama	$508,568,616	$6.50	$9,057,000		$5,368,114	$5,698,432
Arizona	99,813,109	6.50	3,045,275	$48,604	1,110,738	1,116,051
Arkansas	380,520,823	6.75	1,250,500	54,886	6,911,964	6,275,145
California	603,296,264	3.53	6,281,500	635,837	17,877,175	17,624,792
Colorado	414,885,770	4.00	4,207,116	1,360,424	———	———
Connecticut	965,629,807		1,729,253	265,470	———	———
Delaware	89,297,939	No tax levy	826,785	1,055,375	743,675	760,041
Florida	177,723,981	7.50	601,567		3,042,067	2,850,210
Georgia	812,693,155	5.00	6,744,000		5,188,870	5,056,104
Idaho	329,000,000	3.13	2,399,750	150,000	900,000	900,000
Illinois	2,318,314,614	3.50	None	3,000,000	14,000,000	———
Indiana	1,703,921,776	0.90	1,510,163		———	———
Iowa	756,239,043	3.80		1,282,539	4,286,876	4,134,997
Kansas	2,777,054,317	1.20	370,000		3,332,465	———
Kentucky	922,559,186	5.00	1,060,200	189,551	11,915,563	7,477,789
Louisiana	521,303,621	5.00	11,108,300		———	———
Maine	451,780,119	6.00	698,000		4,030,356	3,970,457
Maryland	836,665,067	1.60	7,529,926	6,308,950	5,875,598	6,328,557
Massachusetts	5,027,154,806		114,436,162	33,358,409	46,288,581	44,777,381
Michigan	1,741,215,138	2.85	6,862,161		6,523,041	12,596,952
Minnesota	1,194,962,312	1.47	1,000,000		15,612,048	16,364,789
Mississippi	393,297,173	6.00	3,585,892	634,573	———	———
Missouri	1,804,298,191	1.70	4,398,839		9,368,417	9,167,795
Montana	331,670,418	2.75	579,000	87,997	2,046,000	1,775,000
Nebraska	415,470,075	6.20			2,194,421	———
Nevada	85,465,637	6.00	83,000	5,929,915	———	———
New Hampshire	263,074,386	21.00	1,136,000		2,612,077	2,707,535
New Jersey	2,045,898,214		116,000	472,779	8,534,969	7,670,663
New Mexico	64,506,560	10.00	969,500	13,969	398,343	———
New York	10,121,277,461	0.60	79,858,160	26,867,372	43,074,192	38,045,352
North Carolina	733,153,778	43.00	7,549,550		6,386,857	6,500,149
North Dakota	288,254,270	4.40	937,300	88,354	4,429,223	4,982,528
Ohio	2,484,315,574	1.345	None		9,678,656	9,552,538
Oklahoma	916,416,000	1.25	1,460,000	58,400	969,375	2,245,239
Oregon	844,887,708	1.06	None		4,709,336	1,489,967
Pennsylvania	1,198,861,401	4.00	2,295,510	2,396,683	32,146,978	29,132,124
Rhode Island	536,544,943	1.80	4,600,000	548,905	960,421	2,552,124
South Carolina	279,755,349	5.75	6,528,885	826,765	3,914,007	3,265,276
South Dakota	337,702,276	4.00	373,912	1,081,251	3,581,671	3,356,120
Tennessee	499,702,478	3.50	11,793,766		———	———
Texas	2,515,632,745	1.25	3,976,200	3,976,200	5,144,279	4,530,368
Utah	193,516,352	8.00	1,460,000	279,518	3,771,231	2,659,262
Vermont	202,043,575	None	46,631	591,329	154,880	2,180,068
Virginia	606,848,139	3.50	22,269,992		5,912,010	6,099,479
Washington	955.125,934	29.82	206,024	376,366	11,216,942	5,178,376
West Virginia	1,119,828,173	8.446			5,379,699	5,183,416
Wisconsin	2,941,412,842	1.365	2,251,000		11,950,724	11,722,895
Wyoming	185,934,398	3.20	120,000	4,440	594,990	967,568

The figures included in the above table are the latest obtainable, and relate in most cases to the fiscal year ending in 1911. In some instances the figures are partly for that year and partly for a prior year.

III. STATE CONSTITUTIONS

For the revision of the table of State Constitutions on pp. 184–9 of the AMERICAN YEAR BOOK for 1910, it is necessary only to note that Texas, Colorado, and California have adopted popular initiative as a second means of proposing amendments. The data for New Mexico and Arizona, whose constitutions were adopted during 1911, are as follows:

State.	Date	Method of Adoption.		Present Method of Amendment.			Present Method of General Revision.	
		Framed by	Popular Ratification.	Proposed by	Limitations.	Popular Ratification.	Convention Called by	Popular Ratification.
New Mexico.	1911	Convention	Yes	⅔ members of each house	Not more than three at one time	Majority equal to 40 per cent. of total vote in one-half counties	¾ of each house and popular vote	Majority of votes
Arizona.....	1911	Convention	Yes	(1) Majority of each house (2) Popular initiative		Majority vote on question	Popular vote	Majority vote

IV. STATE AND TERRITORIAL GOVERNORS

State or Territory.	Governor.	Capital.	Length of Term.	Period of Term.	Salary.
			Years.		
Maine.....	*Fred. W. Plaisted.*	Augusta.	2	January, 1911–1913	$3,000
New Hampshire.....	Robert P. Bass.	Concord.	2	January, 1911–1913	3,000
Vermont.....	John A. Mead.	Montpelier.	2	October, 1910–1912	2,500
Massachusetts.....	*Eugene N. Foss.*	Boston.	1	January, 1912–1913	8,000
Rhode Island.....	A. J. Pothier.	Providence.	1	January, 1912–1913	3,000
Connecticut.....	*S. E. Baldwin.*	Hartford.	2	January, 1911–1913	4,000
New York.....	*John A. Dix.*	Albany.	2	January, 1911–1913	10,000
New Jersey.....	*Woodrow Wilson.*	Trenton.	3	January, 1911–1914	10,000
Pennsylvania.....	J. K. Tener.	Harrisburg.	4	January, 1911–1915	10,000
Delaware.....	Simeon S. Pennevill.	Dover.	4	January, 1909–1913	4,000
Maryland.....	Phillips Lee Goldsborough	Annapolis.	4	January, 1912–1916	4,500
Virginia.....	*William Hodges Mann.*	Richmond.	4	February, 1910–1914	5,000
West Virginia.....	Wm. E. Glasscock.	Charleston.	4	March, 1909–1913	5,000
North Carolina.....	*W. W. Kitchin.*	Raleigh.	4	January, 1909–1913	4,000
South Carolina.....	*Coleman J. Blease.*	Columbia.	2	January, 1911–1913	3,000

IV. STATE AND TERRITORIAL GOVERNORS—*Continued*

State or Territory.	Governor.	Capital.	Length of Term.	Period of Term.	Salary.
			Years.		
Georgia		Atlanta.	2	Jan., 1912–July, 1913	5,000
Florida	*Albert W. Gilchrist.*	Tallahassee.	4	January, 1909–1913	5,000
Kentucky	*James. B. McCreary.*	Frankfort.	4	December, 1911–1915	6,500
Tennessee	Ben W. Hooper.	Nashville.	2	January, 1911–1913	3,500
Alabama	*Emmett O'Neal.*	Montgomery.	4	January, 1911–1913	7,500
Mississippi	*Earl Brewer.*	Jackson.	4	January, 1912–1916	4,500
Arkansas	*George W. Donaghey.*	Little Rock.	2	January, 1911–1913	4,000
Louisiana	*Jared Y. Sanders.*	Baton Rouge.	4	May, 1908–1912	5,000
Texas	*O. B. Colquitt.*	Austin.	2	January, 1911–1913	4,000
Oklahoma	*Lee Cruce.*	Oklahoma City.	4	January, 1911–1915	4,500
Ohio	*Judson Harmon.*	Columbus.	2	January, 1911–1913	10,000
Indiana	*Thomas R. Marshall.*	Indianapolis.	4	January, 1909–1913	8,000
Illinois	Charles S. Deneen.	Springfield.	4	January, 1909–1913	12,000
Michigan	Chase S. Osborn.	Lansing.	2	January, 1911–1913	5,000
Wisconsin	Francis E. McGovern.	Madison.	2	January, 1911–1913	5,000
Minnesota	A. O. Eberhart.	St. Paul.	2	January, 1911–1913	7,000
Iowa	B. F. Carroll.	Des Moines.	2	January, 1911–1913	6,400
Missouri	Herbert S. Hadley.	Jefferson City.	4	January, 1909–1913	5,000
Kansas	W. R. Stubbs.	Topeka.	2	January, 1911–1913	5,000
Nebraska	C. H. Aldrich.	Lincoln.	2	January, 1911–1913	2,500
South Dakota	R. S. Vesey.	Pierre.	2	January, 1911–1913	3,000
North Dakota	*John Burke.*	Bismarck.	2	January, 1911–1913	5,000
Montana	*Edwin L. Norris.*	Helena.	4	January, 1909–1913	5,000
Idaho	*James H. Hawley.*	Boise.	2	January, 1911–1913	5,000
Wyoming	*Joseph M. Carey.*	Cheyenne.	4	January, 1911–1915	4,000
Colorado	John F. Shafroth.	Denver.	2	January, 1911–1913	5,000
New Mexico	*W. C. McDonald.*	Santa Fé.	4	January, 1912–1916	5,000
Arizona	*George W. P. Hunt.*	Phœnix.	2	1912–1914	4,000
Utah	William Spry.	Salt Lake City.	4	January, 1909–1913	4,000
Nevada	Tasker L. Oddie.	Carson City.	4	January, 1911–1915	4,000
California	H. W. Johnson.	Sacramento.	4	January, 1911–1915	10,000
Oregon	*Oswald West.*	Salem.	4	January, 1911–1915	5,000
Washington	M. E. Hay.	Olympia.	4	January, 1909–1913	6,000
Alaska	Walter E. Clark.	Juneau.	4	May, 1909–1913	5,000
Hawaii	Walter F. Frear.	Honolulu.	4	June, 1911–1915	5,000
Porto Rico	George R. Colton.	San Juan.	4	March, 1909–1913	8,000

Roman, Republicans. *Italics*, Democrats.

State or Territory.	Number of Members.		Length of Term.		Regular Sessions.	Regular Session Begins.	Limit of Session.	Salary.
	Senate	House.	Senate.	House.				
			Years.	*Years.*			*Days.*	
Maine	31	151	2	2	Biennial.	January, 1913	None.	$300 per year.
New Hampshire	24	390	2	2	"	January, 1913	"	200 per term.
Vermont	30	246	2	2	"	October, 1912	"	4 per day.
Massachusetts	40	240	1	1	Annual.	January, 1912	"	750 per year.
Rhode Island	38	72	1	1	"	January, 1912	"	5 per day, not over 60 days.
Connecticut	35	255	2	2	Biennial.	January, 1913	"	300 per year.
New York	51	150	2	1	Annual.	January, 1912	None.	$1,500 per year.
New Jersey	21	60	3	1	"	January, 1912	"	500 per year.
Pennsylvania	50	207	4	2	Biennial.	January, 1913	"	1,500 per session.
Delaware	17	35	4	2	"	January, 1913	60	5 per day.
Maryland	27	101	4	2	Biennial.	January, 1912	90	$5 per day.
Virginia	40	100	4	2	"	January, 1912	60	500 for regular session.
								250 for extra session.
West Virginia	30	87	4	2	"	January, 1913	45	5 per day.
North Carolina	50	120	2	2	"	January, 1913	60	4 per day.
South Carolina	42	124	4	2	Annual.	January, 1912	None.	200 per session.
Georgia	44	184	2	2	"	June, 1912	50	4 per day.
Florida	32	68	4	2	Biennial.	April, 1913	60	6 per day.
Kentucky	38	100	4	2	Biennial.	January, 1912	60	$5 per day.
Tennessee	33	99	2	2	"	January, 1913	75	4 per day.
Alabama	35	106	4	4	Quadrennial	January, 1915	50	4 per day.
Mississippi	45	136	4	4	Biennial.	January, 1912	45	400 regular, $5 per day, special session.
Arkansas	35	100	4	2	"	January, 1913	90	5 per day.
Louisiana	42	115	4	4	"	May, 1912	60	5 per day.
Texas	31	133	4	2	"	January, 1913	..	5 per day, for 60 days, $2 per day thereafter.
Oklahoma	44	109	4	2	"	January, 1913	..	6 per day, for 60 days, $2 per day thereafter.

V. STATE AND TERRITORIAL LEGISLATURES—*Continued*

State or Territory.	Number of Members.		Length of Term.		Regular Sessions.	Regular Session Begins.	Limit of Session.	Salary.
	Senate.	House.	Senate.	House.				
			Years.	*Years.*				
Ohio	34	117	2	2	Biennial.	January, 1913	None.	$1,000 per year.
Indiana	50	100	4	2	"	January, 1913	60	6 per day.
Illinois	51	153	4	2	"	January, 1913	None.	2,000 per session.
Michigan	32	100	2	2	"	January. 1913	"	800 regular session.
								5 per day, extra session.
Wisconsin	33	100	4	2	"	January, 1913	"	500 per year.
Minnesota	63	119	4	2	"	January, 1913	90	500 per year.
Iowa	50	108	4	2	"	January, 1913	None.	550 regular session.
Missouri	34	142	4	2	"	January, 1913	..	5 per day, for 70 days.
								1 per day thereafter.
Kansas	40	125	4	2	"	January, 1913	50	3 per day.
Nebraska	33	100	2	2	"	January, 1913	60	5 per day.
South Dakota	45	104	2	2	"	January, 1913	60	5 per day.
North Dakota	47	99	4	2	"	January, 1913	60	5 per day.
Montana	27	73	4	2	Biennial.	January, 1913	60	12 per day.
Idaho	23	51	2	2	"	January, 1913	60	5 per day.
Wyoming	27	56	4	2	"	January, 1913	40	8 per day.
Colorado	35	65	4	2	"	January, 1913	90	7 per day.
New Mexico	24	49	4	2	"	January, 1912	60	5 per day.
Arizona	19	35	2	2	"	January, 1912	60	7 per day
Utah	18	45	4	2	"	January, 1913	60	4 per day.
Nevada	19	48	4	2	"	January, 1913	60	10 per day, not to exceed $600.
California	40	80	4	2	"	January, 1913	None.	1,000 per year.
Oregon	30	60	4	2	"	January, 1913	40	3 per day.
Washington	42	96	4	2	"	January, 1913	60	5 per day.
Hawaii	..	...	4	2	Biennial.	February, 1913	90	400 per year.
Porto Rico	11	35	4	2	Annual.	January, 1912	60	5 per day.

State.	Highest State Court.					Other Courts.				
	Name of Court.	No. of Judges	Length of Term.	How Chosen.	Salary.	Name.	No. of Dists.	No. of Judges	Term.	How Chosen.
			Years.						*Years.*	
Maine	Supreme Court	8	7	Gov. and Council	.....	Nisi Prius.	.....	.....	.....	.....
						Superior Courts in 2 counties	.....	.....	7	Gov. and Council
New Hampshire.	" "	5	(*a*)	Gov. and Council	$4,200	Superior Court	.....	5	.....	.....
					4,000					
Vermont	" "	5	2	Legislature	2,500	County Courts	.....	.....	.....	.....
Massachusetts	" "	7	(*b*)	Gov. and Council	8,000	Superior Court	.....	25	(*b*)	Gov and Council
Rhode Island	" "	5	(*c*)	Legislature	.....	" "	.....	6	(*c*)	Legislature
Connecticut	Court of Errors	6	8	Gov. and Legislature	8,000	" "	.....	12	8	Gov. and Legis.
						Courts of Common Pleas in 5 counties	.....	.....	.....	.....
New York	Court of Appeals	9	14	Elected	$14,000	Appellate Division	4	.....	.....	.....
					13,700	Supreme Court	9	98	14	Elected
						County Courts	.....	.....	.....	"
New Jersey	Court of Errors and Appeals	16	7	Gov. and Senate	.....	Chancellor	.....	8	.....	Gov. and Senate
						Supreme Court	.....	9	.....	" " "
						Circuit Court	.....	.....	.....	" " "
Pennsylvania	Supreme Court	7	21	Elected	10,500	Superior Court	.....	7	10	Elected
					10,000	Court of Common Pleas	.....	.....	.....	.....
Delaware	Court of Errors and Appeals	6	12	Gov. and Senate	.....	Chancellor	.....	.....	.....	Gov. and Senate
Maryland	Court of Appeals	8	15	Elected by districts	.....	Circuit Courts	8	.....	15	Elected
						Special Courts in Balt.	.....	.....	.....	.....
Virginia	Supreme Ct. of Appeals	8	15	Legislature	$4,700	Circuit Courts	29	.....	8	Legislature
					4,500					
West Virginia	" " "	4	12	Elected	.....	" "	18	.....	8	Elected
North Carolina	Supreme Court	5	8	"	3,000	Superior Court	16	16	8	"
South Carolina	" "	4	8	Legislature	3,000	Circuit Courts	.....	.....	4	"
Georgia	" "	6	6	Elected	.....	Court of Appeals	3	.....	.....	.....
						Superior Court	26	28	.....	.....
Florida	" "	6	6	"	.....	Circuit Courts	8	8	.....	Gov. and Senate
						County Courts	.....	.....	.....	.....

(*a*) Until 70 years of age. (*b*) During good behavior. (*c*) Until removed by the legislature.

VI. STATE JUDICIARY—*Continued*

State.	Highest State Court.					Other Courts.				
	Name of Court.	No. of Judges.	Length of Term.	How Chosen.	Salary.	Name.	No. of Dists.	No. of Judg s	Term.	How Chosen.
			Years.						*Years.*	
Kentucky	Court of Appeals	7	8	Elected by districts	$5,000	Circuit Courts	33	.....	6	Elected
Tennessee	Supreme Court	5	8	Elected	5,000	Court of Civil Appeals	.....	5	.....	"
						Chancery Court	.....	12	.....	"
						Circuit Courts	.....	20	.....	"
						Criminal Court	.....	6	.....	"
Alabama	" "	7	6	"	5,000	Chancery Courts	5	5	6	"
						Circuit Courts	16	16	6	"
Mississippi	" "	3	9	Elected by districts	4,500	Chancery Courts	.....	.....	4	Gov. and Senate
						Circuit Courts	13	.....	4	" " "
Arkansas	" "	5	8	Elected	4,000	Circuit Courts	17	.....	4	Elected
Louisiana	" "	5	.....	"	6,000	Circuit Cts. of Appeal	6	.....	.....	.....
						District Courts	24	.....	4	"
Texas	" "	3	6		.....	Court of Criminal Appeals	.....	3	.....	.....
						Courts of Civil Appeals	5	15	.....	.....
						District Courts	.....	.....	.....	.....
Oklahoma	" "	5	6	"	.....	Crim. Ct. of Appeals	.....	.....	.....	.....
						District Courts	21	.....	4	"
Ohio	Supreme Court	6	6	Elected	6,500	Circuit Courts	8	24	6	Elected
						Cts. of Common Pleas	.....	.....	5	"
Indiana	" "	5	6	"	6,000	Appellate Courts	2	6	.....	.....
						Circuit Courts	62	.....	6	"
Illinois	" "	7	9	"	10,000	Sup. Cts. in 10 count's	.....	14	.....	.....
						Courts of Appeal	4	15	.....	.....
						Circuit Courts	18	65	6	Elected
						County Courts	102	102	4	"
Michigan	" "	8	8	"	7,000	Circuit Courts	39	45	6	"
Wisconsin	" "	7	10	"	6,000	" "	17	.....	.....	"
Minnesota	" "	5	6	"	7,000	District Courts	19	.....	6	"
Iowa	" "	6	6	"	6,000	" "	20	53	4	"
Missouri	" "	7	10	"	4,500	Courts of Appeal	3	9	12	"
						Circuit Courts	36	55	6	"
Kansas	" "	7	6	"	4,000	District Courts	38	38	4	"
Nebraska	" "	7	6	"	4,500	" "	16	29	4	"
South Dakota	" "	5	6	"	3,000	Circuit Courts	10	.....	4	"
North Dakota	" "	5	6	"	.....	District Courts	8	.....	4	"

VI. STATE JUDICIARY—*Continued*

State.	Highest State Court.					Other Courts.				
	Name of Court.	No. of Judges	Length of Term.	How Chosen.	Salary.	Name.	No. of Dists.	No. of Judges.	Term.	How Chosen.
			Years.						*Years.*	
Montana	Supreme Court	3	6	Elected	$6,000	District Courts	13	16	4	Elected
Idaho	" "	3	6	"	5,000	" "	7	.....	4	"
Wyoming	" "	3	8	"	5,000	" "	4	4	6	"
Colorado	" "	7	6	"	5,000	" "	13	.....	6	"
						County Courts	.....	.....	.....	.....
New Mexico	" "	3	8	"	6,000	District Courts	8	8	6	"
Arizona	" "	3	6	"	5,000	Superior Courts	14	14	4	"
Utah	" "	3	6	"	5,000	District Courts	7	12	4	"
Nevada	" "	3	6	"	6,000	" "	9	9	4	"
California	" "	7	12	"	8,000	Courts of Appeal	3	9	12	"
						Superior Courts	58	98	6	"
Oregon	" "	5	6	"	4,500	Circuit Courts	9	16	6	"
Washington	" "	9	6	"	5,000	Superior Courts	25	44	4	"

VII. COUNTY OFFICERS

Name of State.	No. of Counties.	County Bd. No. of Members.	County Judge.	Probate Judge.	Prosecuting Atty.	Sheriff.	Coroner.	Clerk of Court.	Register of Probate.	County Clerk.	Register of Deeds.	County Auditor.	County Assessor.	County Treasurer.	County Surveyor.	Supt. of Schools.	Supt. of Schools.	Health Officer.
Maine	16	3		El.	El.	El.	App.	El.	El.	....	El.			El.				
New Hampshire	10	3		App.	El.	El.	App.	App.	El.	....	El.	App.		El.			App.	
Vermont	14	2	El.	dist.	El.	El.		App.		....		App.		App.				
Massachusetts	14	3		App.	Dist.	El.	....	El.	El.	....	El.			El.				
Rhode Island	5	None				App.		App.										
Connecticut	8	App.3	s.	dist.	App.	El.	App.	App.				App.		App.				App.
New York	61	Var.	El.	El.	El.	El.	El.	....		El.	....	s.		El.		dist.	El.	
New Jersey	21	Var.	El.	El.	El.	El.	El.	....		El.	s.	App.		App.		App.	s.	
Pennsylvania	67	3		El.	El.	El.	El.	El.	El.	....	El.	El.	El.	El.	El.	App.	s.	
Delaware	3	7–10		El.		El.	El.	El.	El.	....	El.			El.		App.		App.
Maryland	24	3–5		El.	El.	El.	App.	El.		....	....			El.	El.	App.		App.
Virginia	100	3–8		....	El.	El.	App.	....		El.	....		El.	El.	App.	App.	App.	
	18*a*																	
West Virginia	55	3			El.	El.	App.	El.		El.			El.		El.	El.	App.	App.

VII. COUNTY OFFICERS—*Continued*

Name of State.	No. of Counties.	County Bd. No. of Members.	County Judge.	Probate Judge.	Prosecuting Atty.	Sheriff.	Coroner.	Clerk of Court.	Register of Probate.	County Clerk.	Register of Deeds.	County Auditor.	County Assessor.	County Treasurer.	County Surveyor.	Supt. of Schools.	Supt. of Poor.	Health Officer.
North Carolina	98	3–5			Dist.	El.	El.	El.		....	El.			El.	El.	App.		App.
South Carolina	43	Var.		El.	Dist.	El.	El.	El.		....	s.	App.		El.		El.		
Georgia	146	....	s.	El.	Dist.	El.	El.	El.			....		El.	El.	El.	App.	s.	....
Florida	47	5	El.	....	Dist.	El.		El.					El.	El.	El.	El.		App.
Kentucky	119	8	El.	....	El.	El.	El.	El.		El.			El.	App.	El.	El.		App.
Tennessee	96	Var.	El.	....	Dist.	El.	App.	El.		....	El.	....	s.	El.	App.	App.	App.	App.
Alabama	67	5	....	El.	Dist.	El.	El.	El.			....		El.	El.	App.	El.		App.
Mississippi	79	5		....	Dist.	El.	El.	El.				El.	El.	El.	El.	El.		App.
Louisiana	60*b*	Var.			El.	El.	El.	....		El.	....		El.	App.	El.	App.		App.
Texas	245	4	El.	....	El.	El.		El.		El.	....		El.	El.	El.	El.		App.
Oklahoma	77	3		El.	El.	El.	El.			El.	El.		El.	El.	El.	El.		App.
Arkansas	75	Var.	El.	....	Dist.	El.	El.	El.		....	....		El.	El.	El.	El.	....	
Missouri	115	3		El.	El.	El.	El.	El.		El.	s.	s.	El.	El.	El.	El.		App.
Ohio	88	3		El.	El.	El.	El.	El.			El.	El.	....	El.	El.	App.	El.	
Indiana	92	3(7)*c*	s.	s.	El.	El.	El.	El.			El.	El.	El.	El.	El.	App.	App.	
Illinois	102	Var.	El.	s.	El.	El.	El.	El.		El.	El.	....	s.	El.	El.	El.	App.	
Michigan	83	Var.		El.	El.	El.	El.	....		El.	El.	s.		El.	El.	El.	App.	
Wisconsin	71	Var.	El.	....	El.	El.	El.	El.		El.	El.	....	El.	El.	El.	El.	App.	
Minnesota	86	3–5		El.	El.	El.	El.	El.		....	El.	El.		El.	El.	El.		
Iowa	99	3–7			El.	El.	El.	El.		....	El.	El.		El.	El.	El.	App.	....
Kansas	105	3		El.	El.	El.	El.	El.		El.	El.	s.		El.	El.	El.	App.	
Nebraska	92	Var.	El.	....	El.	El.	El.	El.		El.	s.			El.	El.	El.		
South Dakota	67	3–5	El.	....	Ei.	El.	El.	El.			El.	El.	s.	El.	El.	El.		
North Dakota	49	3–5	El.	El.	El.	El.	El.	El.		....	El.	El.	s.	El.	El.	El.		App.
Montana	28	3			El.	El.	El.	El.		El.	....	s.	El.	El.	El.	El.		App.
Idaho	23	3		El.	El.	El.	El.	El.		....	....	....	El.	El.	El.	El.		
Wyoming	15	3		....	El.	El.	El.	s.		El.	....		El.	El.	El.	El.		....
Colorado	60	3–5	El.	....	Dist.	El.	El.	....		El.	....		El.	El.	El.	El.	....	....
New Mexico	26	3		El.	Dist.	El.	....	El.	El.	s.	El.		El.	El.	El.	El.		....
Arizona	13	3		El.	El.	El.	El.	El.		El.	El.	s.	El.	El.	El.	El.		App.
Utah	27	3			El.	El.		....		El.	El.		El.	El.	El.	El.		
Nevada	15	3		....	El.	El.	....	....		El.	El.	El.	El.	El.	El.	El.		App.
California	58	3–7	El.	....	El.	El.	El.	....		El.	s.	El.	El.	El.	El.	El.		
Oregon	34	2		....	Dist.	El.	El.	....		El.	s.	El.	El.	El.	El.	El.		App.
Washington	38	3		....	El.	El.	El.	....		El.	....	El.	El.	El.	El.	El.		

a. Cities. *b*. Parishes. *c*. 3 County Commissioners; 7 members in the County Councils. El., an Elective County Office. s., a county office in some counties. App., an Appointive County Office. ...., duties performed by some other officer. dist., Elected or Appointed for District smaller than a County. Var., number varies in different counties. Dist., Elected or Appointed for District larger than a County.

TOWNSHIP AND VILLAGE GOVERNMENT

JAMES Q. DEALEY

Local Government in the United States.—The sovereign powers of the United States of America are divided between the federal government and the states, these latter having complete jurisdiction over the local bodies politic within their borders. The area of each state is divided into counties (called parishes in Louisiana), and the powers of counties are defined in the constitution or the statutes of the state. Local government in the United States is decentralized; hence, a county ordinarily is granted complete autonomy in local matters. The county is also used by the state as its agent in the transaction of general functions, such as the assessment and levying of taxes, judicial administration, education, roads and poor relief. The subdivisions of a county may in general be distinguished as urban, such as cities and villages; and rural, generally known as townships, towns, or districts.*

The Emerging National Type.—As there is no uniform law for all the states covering the organization and functions of these bodies politic, each of the states formulates its own system of local government without much regard for other systems. Yet, as there is a common basis of political theory and practice throughout the United States, and as new states tend to imitate the successful devices of their older sisters in the Union, there is in fact a national type, though with many exceptions and variations from the rule. This type already existent in most states includes: (1) a county as the fundamental unit of local government; (2) thinly inhabited districts organized within the county for convenience in county administration; (3) the township, or the New England town, organized for the government of populous rural communities; and (4) incorporated cities or villages, having local powers and delegated general powers exercised under the somewhat nominal supervision of county or state. This developing national type has historically two distinct origins, the county of the older southern states and the town of the New England states, each of which in its development has tended to approximate to the type above mentioned. For in both of these political areas may be noted the subdivision of the area of the state into counties, and these again into incorporated urban centers, populous rural districts, and thinly inhabited administrative districts for convenience in county administration. If governmental organization adjusted itself automatically to changing conditions, this type would soon prevail throughout the United States. Since, however, legal changes involve statutory authorization, and this depends on the human element in legislation, suitable readjustments to changed conditions are not always made, so that at present there are in some states many wide variations from the developing national type. A brief generalized statement of actual conditions in the several sections of the United States in respect to the government of the minor subdivisions of the American county may help to make clearer this statement.

The County Administrative District.—Throughout the states of the South and the Far West prevails the so-called county system, in which local autonomy is definitely vested in the county with its subdivision into administrative districts, often called precincts or townships. These have no corporate powers, except for school purposes in some states, and as a rule there is a separate district or precinct for the administration of each function; there are, for example, precincts for judicial purposes,

* The national Census Bureau defines urban population as that residing in cities or other incorporated places of 2,500 inhabitants or more, but this distinction does not hold in state systems, and will be ignored in this article.

for elections, roads, and for schools. The districts are generally larger in area than are the townships in the North, but they are thinly inhabited and distinctly rural. In these states cities and villages are regularly incorporated and usually have large local autonomy, with some county and state supervision over their exercise of general powers. The system as a whole is obviously best suited for states or counties somewhat sparsely settled or strongly rural in character, where the administrative business of a locality is small and relatively unimportant.

The Township of the North.—The northern states of the union, lying east of the Rocky Mountains, but excepting New England, contain collectively over one-half the population of the United States. In these the township system dominates, though sparsely populated counties naturally have administrative districts instead. From these townships are regularly separated in organization urban centers, which are incorporated as cities or villages under general or special statutes. The average township, though with many exceptions, is an artificial area of six miles square laid off by geographical survey. It is a rural district of comparatively small population and is incorporated for the purpose of administering its local affairs and of serving as agent in more general matters for the county, which, in these states, is an important body, in close relation to the state and having large jurisdiction over its townships. In most of the northern tier of these states, township meetings of voters, after the New England pattern, are held for elections and for the transaction of township business, but the business meeting has small administrative power, is, as a rule, poorly attended, and tends to delegate its functions to its Board or Council. In the southern tier, the voters meet for election only, having no deliberative powers. Township administration is regularly vested in a board, the members of which are usually known as supervisors or trustees. In most of the states an executive officer has become differentiated, known as the supervisor, or the township chairman or trustee. In addition to his administrative duties in the township, he may be, as in New York State, for instance, *ex officio* a member of the county board, and thus connects the local with the general administration. Schools are regularly in charge of a small elected school committee, but the school district is often organized separately from the township, and its voters are frequently empowered to meet for the transaction of school business.

The New England Town.—The towns of the six New England states vary in area from 20 to 40 sq. miles and in population from less than 100 inhabitants to over 20,000. There is still unorganized territory in the northern parts of New Hampshire and Maine; districts formed from this, preliminary to a town organization, are in Maine called plantations. Historically, the town preceded the county, which now, however, exists in all of the six states, but has few powers in any; it is especially weak in Vermont, Connecticut and Rhode Island. Each state has cities, but three only have incorporated villages or boroughs,* and there are scarcely a hundred of these all told. In the other three states, the villages in organization are not separated from their towns. In each town, under the chairmanship of an elected moderator, an annual town meeting, composed of all the voters of the town, is held, and special meetings subject to call. The town meeting first elects its numerous officers and boards, the chief of which are the moderator, the town clerk and the board of selectmen, or town council, which is a body of from three to nine members in charge of administration. After election of officers the meeting hears the reports of the retiring officers, discusses the budget for the ensuing year, and instructs the selectmen in matters of future policy. Obviously, in the larger towns all the voters cannot meet in the town hall for the transaction of business and as a remedy the town may have its urban centers incorporated as villages, or have the whole

* Maine, Vermont, Connecticut.

town incorporated as a city.* The authority of the town is large, including such powers as assessment, taxation, roads, poor-relief, franchises, and schools, which are regularly entrusted to a school board or committee. The powers of the town to a slight extent are supervised through state administrative boards, or by the county, if it is so authorized. The New England town, it may be said, is losing its historic importance, chiefly through the growth of urban centers and the development of the county, but also through the influx of a foreign-born immigrant population unused to a system of direct democracy.

The Village.—Within the United States there are now considerably over 10,000 incorporated villages, and the number is steadily increasing, since not only is urban population multiplying but this form of body politic is rapidly growing in favor. There is no uniform population basis for a village, and the numbers of inhabitants fixed by law vary from a minimum of 100 to a maximum of 10,000. These urban centers are variously called by statute villages, boroughs, incorporated towns, or even cities; this last term in Kansas, for example, includes all municipal corporations. They are regularly incorporated under general statutes, are given authority in local administration, and serve as agents for township or county in more general matters. Village administration is regularly in the hands of an elective board or council of from three to nine members elected for from one to three years. This village council, with its chairman elected by itself, exercises the statutory powers of the village. Frequently, however, a special chairman or president is elected by popular vote as a sort of mayor, in which case he regularly has some supervisory authority and other specified powers, such as justice or police; he also regularly has a limited veto over the acts of the council.

In closing it may be said that throughout the United States there is a strong tendency to insist on the election, not appointment, of all local officials. There are numerous officials elected each for a specified function, and there are many boards of administration. Service is performed without pay, or for fees or small salaries. Supervision from county or state is poorly performed as a rule, so that waste through incompetency or dishonesty is not uncommon. The qualifications for local suffrage are always fixed by state constitution, but in school matters women as well as men usually have the suffrage, and referendums involving the issuance of bonds are sometimes referred to taxpayers only. The chief need at present throughout the United States is that there be a closer coördination and a better supervisory system, so as to bind more effectively the state, county, urban center and township.

Bibliography.—In John A. Fairlie's *Local Government in Counties, Towns and Villages* (New York, The Century Co., 1906), the only modern book covering the entire subject, will be found on pages 273-9, a lengthy bibliography, and a list of school text-books, each explaining the system of local government in the state which it describes.

* The town of Cranston, Rhode Island, for example, with a population of over 21,000, became a city in 1910.

XI. MUNICIPAL GOVERNMENT

NEW CITY CHARTERS

CLINTON ROGERS WOODRUFF

Tendencies in Charter Framing.—Developments during 1911 have amply justified the recent statement of Dr. Charles E. Merriam that "the American city charter is the most rapidly changing political structure in the United States." Charter revision and rebuilding have been uppermost issues in nearly every city of any size or importance. In Boston and New York the question has been to protect what has been gained. In other cities it has been to secure improvements, and in a long list of communities to adopt the commission form.

Four leading cities now have recently secured charters providing a strong mayor and a strong legislature of nine, elected at large: Boston, Pittsburg, Seattle and Los Angeles. In these places there has been material improvement in administration, and the general results have been satisfactory to the progressives who have been responsible for the changes.

At the Richmond meeting of the National Municipal League (Nov. 13-16) the secretary reported that during the 17 years of the League's activities, the most important tendencies to be noted had been those toward an expansion of municipal functions and a simplification of municipal machinery, and that this latter tendency has been most marked in the matter of charter revision. Each year there has been a marked increase of interest in this phase of the subject, and an equally marked increase in the number of efforts to eliminate the complexities of the older forms of charters. The movement for the establishment of commission governments in American cities, owes a large part of its success, which has been as marked during the year 1911 as in any previous year since its introduction in Galveston in 1901, to the fact that it is a simple form of government, easily understood by men of average intelligence and opportunity, and because it provides the short ballot and a simplified form of nomination and election.

Even in those charters which can not properly be classed as commission government or semi-commission government charters, the same tendency is to be observed, notably in the new charters for Boston, Pittsburg, Seattle and Los Angeles. In each of these the small council elected at large takes the place of cumbersome legislative bodies, in some instances of two legislative bodies, elected from wards. The elimination of party designation and the provision for a simple form of nomination are also chief characteristics.

Boston.—Public opinion was too strongly in favor of the new charter in Boston for the politicians to have their way in amending it to suit their purposes. We may look for other efforts to alter it, but the force of public sentiment was made so clear that any such attempt will be undertaken with caution. The charter is to have a fair trial. The small council will be continued, and the evil of ward representation, with its chain of log-rolling, bargaining, political trading, is put aside. The city gained by the fight that had been waged, because the desires of the public were plainly arrayed and

prevailed against the desires of a group of designing practical politicians whose aim was to restore the very conditions which the adoption of the charter demolished.

New York was the scene of another conflict over charter revision in which enlightened public opinion was arrayed against selfish political considerations and won out. The city needs a new charter and needs it badly, but it must be carefully worked out by responsible representatives. The work on the "Gaynor charter was done in the dark and in haste. It was done by methods that created suspicion and pointed to secret jobbery. It was done in defiance of enlightened opinion and in utter disregard of the wishes of the people of New York, as the politicians learned to their discomfort. The draft of the new charter was a patchwork affair. No competent body of lawyers, no civic organization of any kind, was known as a party to its preparation." These are the words of the New York *World*, "Various unidentified workmen sawed and hammered at it from time to time. What they made of it nobody seemed to know, least of all the people of New York who were to be governed under it."

So strongly expressed was the public sentiment against the change in the laws of a letting down of the restrictions, that its sponsors receded from their opposition to changes and agreed to eliminate all changes in the civil-service system from the charter. This was but the forerunner of the end, the charter failing through the inability to dragoon a sufficient number of the members of the Senate into line to secure its passage. In this connection it is important to point out that the marshalling of public opinion was effected through the leadership of the civic organizations of New York City. Governor Dix likewise deserves credit for insisting that he would approve no bill unless there had been an opportunity for the people to express their views upon it. To offset this attitude of the governor, the dates of the hearings and of the reconvening of the legislature, were fixed at a time when it was expected that public sentiment would be most lethargic and active leaders away. They miscalculated, however; for the civic workers were on guard and at once converted the hearings into real hearings, and forced the issue home upon the people. The response was immediate, and afforded a substantial tribute to the generalship of the leaders of the movement.

Jacksonville, Fla., has been granted a new charter which represents the evolutionary process of charter revision. Over 20 years ago the city bonded itself for $1,000,000 for sanitary improvements, and a board of bond trustees of nine business men was appointed. This board has been very successful, as the personnel of it was selected from the business community, rather than a political faction. It controls the city electric-light plant, city waterworks, police, fire and public works, and, under the charter amendment its powers have been increased and the powers of the mayor and council decreased. The amendment of the charter abolished the board of public works and the city health department, placing these duties upon the bond trustees. The board of trustees secured the services of an expert civic and sanitary engineer from the ranks of the United States engineer corps. This is in line with the ideas of the Civic Improvement Committee of the Board of Trade.

Commission Government.—There has been a continuous development of interest in and adoption of the commission form of city government. The following is a list of those cities which have either by their own direct vote or by an act of the legislature gone on to the commission basis during 1911:

Commission government has received the endorsement of a number of governors as shown not only in their approval of bills, but in their annual messages. Governor Wilson has been a vigorous advocate of it; so has Governor Tener of Pennsylvania, as well as a considerable list of western executives. Leading politicians, including men like Senator Penrose of Pennsylvania, and Mayor Gaynor of New York City, have en-

dorsed the idea. Governor Dix, of New York, however, vetoed a commission government charter for the town of Beacon, in his veto memorandum saying: "I intend to recommend to the legislature of 1912, and have ready for its consideration a uniform charter for cities of the third class. Such charter should be most carefully prepared and be broad enough in its provisions to permit any existing community or communities by voting upon the question to adopt its provisions and thereafter, be governed by such law."

A significant feature of the commission government movement has been the fact that in so many instances the people of a community have been given the opportunity of saying whether or not they wished that particular form to be adopted; in other words, hand in hand with this simplification of form and machinery, has gone an increasing tendency toward municipal home rule, with a very considerable strengthening of the self-governing instinct in communities and a very great increase in the interest of the people in their local affairs. Governor Dix's proposition will be more complete if he gives the electors of cities of the third class the opportunity of saying whether they wish a commission form or some other form of government for their municipality.

Of the legislatures which met in 1911, sixteen were confronted with commission-government bills. The states of New Jersey, Alabama, Utah, Montana, Washington, Idaho, California, Nebraska and Iowa adopted legislation on the subject. The Connecticut legislature passed the Norwich charter. The Pennsylvania legislative committee reported favorably on the bill for third-class cities but the measure failed on the floor. In three states, namely, California, Washington and Iowa, the system was extended by permissive legislation to the smaller cities.

A permanent organization of the cities under the commission form of government in the State of Illinois was formed in Peoria, June 28. The purpose of the organization was to discuss the Illinois law and suggest the necessary amendments to the law, and to advance the general interest of cities under this form of government. The mayors, corporation counsels, city attorneys and commissioners were organized and divided into five groups: the department of public affairs, department of accounts and finance, department of public health and safety, department of streets and public improvements and department of public property. The intent is to have group meetings, the mayors and legal advisers together, and the commissioners of their respective departments together. Besides the group meeting there will be one general meeting where suggestions and recommendations coming from the different departments may be acted on.

CITIES ADOPTING COMMISSION GOVERNMENT IN 1911

New England Division.

Maine.

Gardiner	5,311

Massachusetts.

Lawrence	85,892
Lowell, Charter	106,294

New Jersey.

Hawthorne,	State Law	ad'p'd by city	3,400
Irvington,	"	"	11,877
Margate,	"	"	129
Ocean City,	"	"	1,950
Passaic,	"	"	54,773
Ridgewood,	"	"	5,416
Trenton,	"	"	96,815
Wallington,	"	"	3,448

South Atlantic Division.

West Virginia.

Parkersburg, Charter	17,842

North Carolina.

Greensboro, Charter	15,895
Wilmington, "	25,748

Georgia.

Cartersville, State Law	4,067

Illinois.

Braceville,	State Law	ad'p'd by city	971
Carbondale,	"	"	5,600
Clinton,	"	"	5,165
Decatur,	"	"	31,140
Dixon,	"	"	7,216
Elgin,	"	"	25,976
Hamilton,	"	"	1,627
Hillsboro,	"	"	3,424
Jacksonville,	"	"	15,326
Kewanee,	"	"	9,307
Moline,	"	"	24,199
Ottawa,	"	"	9,535

Pekin,	State Law	ad'p'd by city	9,897
Rochelle,	"	"	2,732
Rock Island,	"	"	24,335
Springfield,	"	"	51,617
Spring Valley,	"	"	7,035
Stirling,	"	"	7,467
Waukegan,	"	"	16,069

Michigan.

East Jordan,	Home Rule	Law..	2,516
Fremont,	"	" ..	2,009
Pontiac,	"	" ..	14,532
Wyandotte,	"	" ..	8,287

WEST-NORTH-CENTRAL DIVISION.

Minnesota.

Faribault, Home Rule Charter under State Law	9,001

South Dakota.

Lead	8,392

Kansas.

Chanute	9,272
Manhattan	5,722
Pratt	3,302

Nebraska.

Beatrice	7,875
Omaha, State Law	124,096

WEST-SOUTH-CENTRAL DIVISION.

Kentucky.

Lexington	35,099

Tennessee.

Chattanooga	44,604
Knoxville, Special Charter	36,346
St. Elmo, Charter	2,426

Alabama.

Birmingham,	State Law	132,685
Cordova,	"	1,747
Hartselle,	"	1,374
Huntsville,	"	7,611
Mobile,	"	51,521
Montgomery,	"	38,136
Talladega,	"	5,854
Tuscaloosa,	"	8,407

Mississippi.

Clarksdale	4,079

Oklahoma.

El Reno,	Home Rule	Charfer..	7,872
Guthrie,	"	" ..	11,654
Holdenville,	"	" ..	15,000
Lawton,	"	" ..	7,788
Oklahoma City,	"	" ..	64,205
Stillwater,	"	" ..	3,444

Texas.

Port Arthur	5,000

MOUNTAIN DIVISION.

Montana.

Missoula, State Law	12,869

Utah.

Salt Lake City, State Law	92,777

Wyoming.

Sheridan,	State Law	7,522
Murray,	"	4,057
Ogden,	"	25,580
Provo,	"	8,925

PACIFIC DIVISION.

Washington.

Chehalis	4,507
Hoquiam	8,171
North Yakima	14,082
Spokane, Home Rule Charter	104,402
Walla Walla, Home Rule Charter	19,364

California.

Monterey,	Home Rule	Charter..	4,923
Sacramento,	"	" ..	44,696
San Luis Obispo,	"	" ..	5,157
Santa Cruz,	"	" ..	11,146
Stockton,	"	" ..	23,253
Vallejo,	"	" ..	11,340

Home Rule.—Governor Dix, of New York, in an address before the International Municipal Congress made a striking statement in favor of municipal home rule:

The time has come when the cities of America should demand that instead of being governed as subject provinces, they shall be endowed with powers of government as complete and efficient as those vested in the state and nation by the state and federal constitutions. Such action would stimulate civic pride, would dignify municipal responsibility, and inspire wholesome administration in the various city departments for the regulation of affairs purely local.

We have in America to-day too little of civic pride. We have love and reverence for our state, we thrill with patriotism for our country, but we have no such emotions for our city. Endow our cities with the self-government to which they are entitled, establish the true relation of state and municipality, and there will result better government both for the state and for the city.

Wisconsin's legislature adopted a home-rule act giving to the cities larger powers and put in the course of adoption the following proposed amendment to the constitution:

Article 11, 3a. Cities and villages shall have power and authority to amend their charters, and to frame and adopt new charters, and to enact all laws and ordinances relating to their

municipal affairs, subject to the constitution and general laws of the state.

A series of amendments to the California constitution were adopted on Oct. 10, providing for municipal home rule. They were not the simple provisions of the proposed Wisconsin amendments. They represented the idea of inserting statutes in the fundamental law rather than a grant of broad general powers, in other words legislation *via* the constitution.

MUNICIPAL RESEARCH

In the effort to establish the business affairs of cities upon a more efficient basis, the bureaus of municipal research have played an important part. New York, Philadelphia, Chicago, Cincinnati, Milwaukee, Fort Wayne, Ind., West Chester, N. Y., Hoboken, Boston, Memphis, Minneapolis, Walla Walla, Montclair, N. J., New Rochelle, N. Y., San Francisco and Oakland, Cal., and Pittsburgh now have official or voluntary bureaus.

The New York Bureau continues (see AMERICAN YEAR BOOK, 1910) its active career and has published a long series of striking leaflets and pamphlets which have served to arouse and educate public opinion. It has undertaken the administration of the Metz Fund for "promoting efficient municipal accounting and reporting." In his letter creating the fund of $30,000 ($10,000 a year for three years) Mr. Metz said: "While it is obvious that the $10,000 will not reorganize the accounts of all American cities, it should, however, be sufficient to make available to all cities the results of the experience which is being acquired in each. For example, New York City has spent for the last several years past, thousands of dollars in working out principles and in demonstrating the practical application of accounting methods to municipal business. A good deal of progress was made during my administration as comptroller, and I am glad to see that my successor in office is continuing the work which began under me. Every city in America should have the benefit of the work which is now being effectively carried on, and New York should have the benefit of the experience of other cities."

This fund, under the direction of U. L. Leonhauser, is issuing as a part of its work a series of publications which are in the nature of manuals of elementary municipal bookkeeping; it also has charge of coöperative investigations conducted by the comptrollers and mayors of certain cities to work out needed details of the administration. It has also taken up the question to which the U. S. Bureau of the Census and the National Municipal League have been giving active attention for ten years. To this end it is issuing a series of "Short Talks" intended to instruct in the principles of municipal accounting and reporting all who have to do with or are interested in that subject. To the second of the series it subjoins a glossary of the terms used in municipal accounting. It is possible that certain of the distinctions made would not be agreed to by all accountants; but in general the definitions are those commonly accepted. (Address of Fund: 261 Broadway, N. Y.)

Philadelphia Bureau—The most important achievement of the Philadelphia Bureau was its thoroughgoing report on weights and measures and the passage of an act by the Pennsylvania legislature providing for the establishment of a bureau of standards in the Department of Internal Affairs of Pennsylvania, for the purpose of regulating and maintaining a uniform standard of legal weights and measures in the state to conform with the original standards of weights and measures as adopted by Congress, and verified by the National Bureau of Standards; and to assist in securing the enforcement of laws relating to sealers of weights and measures, now in force or that may hereafter be enacted.

Mayor Blankenburg of Philadelphia has sought the active coöperation of the Bureau. The first work he asked it to undertake was to prepare a complete roster of the city's

employees with a description of their duties, preparatory to a complete reorganization of the whole service. In other directions the services of the Bureau will be availed of by the new officials with the end in view of securing a more efficient administration of public affairs. Another activity of the Philadelphia Bureau which had a widespread influence in the city was the holding of a Milk Show and the publication of an elaborate report on the exhibit and the whole subject. (Address of Bureau: Real Estate Building, Philadelphia.)

Hoboken's Bureau of Municipal Research was established in 1909 by Mrs. Robert Livingstone, Hoboken, and has four definite ends in view: (1) To interest Hoboken's health and school officials and parents in the work of medical examination and inspection of school children according to standards already worked out by New York City's division of child hygiene; (2) to use this experience as an entering wedge to secure a better budget; (3) to prepare for the baby-saving campaign next summer by making ready for proper milk inspection, for the home instruction of mothers, and for learning the truth promptly about unnecessary sickness and deaths among infants; (4) to use publicity methods with regard to each step similar to those heretofore employed by the New York Bureau through published reports, public statements of officials, conferences, churches, club meetings, and through postal cards and other bulletins sent to a mailing list of Hoboken citizens.

Cincinnati's Bureau was also established in 1909. Its purpose was stated to be "to conduct an entirely nonpartisan study of the methods and work of the several departments of the city government, with a view to recommending such modifications and improvements as it believes to be to advantage; to do whatever it can to promote the efficiency and economy of municipal administration; and to furnish citizens with the facts of public business." The general method pursued by the bureau is to examine the payrolls, confer with officials, and prepare a schedule showing the organization of the work and the working force, submitting this to the department for verification and correction; also to draw up and submit descriptions of the accounts kept and of the statistical and service records. Special investigation is then made of such portion of the department's work as may seem to require it, and a report is submitted to the head of the department setting forth what has been found and recommending changes to remedy defects. If these recommendations are adopted assistance is rendered in putting them into operation. Finally it makes public the report and the action taken by the department thereon.

It will have a large opportunity for usefulness in connection with the new administration of Mayor Henry T. Hunt, who was elected on a National Municipal League platform and who, like Mayor Blankenburg of Philadelphia, looks to the Bureau for active and effective coöperation.

In Chicago there is both a Municipal Efficiency Commission, an official body, and a Bureau of Public Efficiency, which is an unofficial body (see AMERICAN YEAR BOOK, 1910). The Commission was created by the action of the City Council "to adjust all controversies as to salary and civil service grades, to fix the same in all cases in which they have not been properly determined, to recommend uniform salaries as to the value of grades, to classify the inspection service of the city and to recommend the compensation of each class, and to make such other recommendations as its investigation may prompt looking to greater municipal efficiency."

Uniform Organization and System. —During its earlier deliberations this commission endeavored to create uniform organization, method and system. This work it has completed and "leaves to a thoroughly equipped institution of municipal government," the Civil Service Commission, with an expert staff capable of aiding departments in solving problems growing out of employment, of coördinating the activities of departments, of maintaining standards for original and promo-

tional examination, employment grades, salary for services and methods for determining individual and group efficiency in the public service.

The work accomplished by the commission was broadly treated under two heads: (*a*) the standardization of employment; (*b*) individual, group and departmental efficiency.

Standardization of Employment.—To accomplish the first purpose and in order to create a proper classification of the service, to define duties and standardize employment, the complete organization of all departments was charted, showing lines of authority from the highest to the lowest position; divisions of work, duties and responsibilities of each employee; lines of promotion and the relative position of each place of employment. This developed many faults in organization and inconsistencies in salaries, and made possible their ultimate correction. With a prompt appreciation of the value of the chart idea, the Civil Service Commission adopted the plan, and required that all changes be reported in order that the charts might be kept continuously up to date.

Compensation Charts.—Subsequently, as the work of charting progressed, "compensation charts" were worked out for each division of the service. These charts showed diagrammatically the following:

Titles of all positions in the classification division and in each grade thereof.

Number of positions with the same title, and grade in each department or bureau of the city.

The salary of each such position in each department.

Number of positions in the division in each department, and the number in such division in the entire city service.

Total and average salaries of positions in the division in all departments.

In explanation of the value and use of these charts the report pointed out that "until they were prepared it was impossible to determine with any decree of accuracy the number of positions in any given division or grade in any department, the total compensation therefor, or the average salaries for like positions in the same or different departments. Standardization of employment, uniformity of salaries and the prevention of duplication of work was impossible. The whole plan is one of scientific analysis of the public service."

Efficiency.—Under the second head "individual, group and departmental efficiency," the commission took into account, first, conditions under which employees work as to methods, system, organization, supervision and accountability; second, instruction in specialized duties, recognizing scientific and expert training to be prime factors in efficiency; and third, consideration of the rights and opportunities of employees as to work, condition, hours, advancement and recognition of merit.

Municipal employment being in process of standardization, the maintenance of the standards prescribed was equally essential. The commission therefore recommended to the Civil Service Commission: (*a*) the adoption of a plan for determining and recording individual efficiency; (*b*) the application of such plan, at least in principle, to the work of groups of employees for the purpose of determining relative group or departmental efficiency; (*c*) the use of ascertained efficiency as factors in promotion, in lay-offs, when reductions in force are necessary, and in separation under charges. The Civil Service Commission developed and installed an efficiency system along the lines of these recommendations. The commission recommended also the establishment of an Efficiency Division as a permanent part of the city government, and suggested a number of subjects on which it should be asked to report. (See "Final Report of the Municipal Efficiency Commission, City of Chicago, 1909-1911.")

The Merriam Commission (official title, The Chicago Commission on City Expenditures) was appointed Aug. 19, 1909, to conduct a comprehensive inquiry into the expenditures of Chicago. In April, 1911, it

automatically dissolved as a result of the change in the city administration. Its work constituted the first attempt which has been made toward a broad, systematic survey of the efficiency of city business in Chicago, and a review of that work is deemed timely and important. The commission presented to the city council 20 special reports setting out its findings and recommendations. These reports made specific criticisms of the form of the city budget, of methods of drawing and enforcing contracts and of purchasing supplies, of inadequate or faulty inspection work in some departments, of inefficient labor service—notably in the bureau of sewers—of certain defective accounting methods, of wasteful duplications of effort and of lax administrative methods in general. The endeavor was made to fix responsibility for these conditions wherever possible, and the resignations of two high officials, namely, the Commissioner of Public Works, and his deputy commissioner, and the discharge of three other officials, namely, the Superintendent of Sewers, the Assistant City Engineer, and the Superintendent of City Dumps, occurred following investigation by the commission of their branches of the city service. Information gathered by the commission was placed in the hands of the state attorney or laid before the grand jury. Sixteen indictments were returned as a result of the investigations of the Commission.

Recommendations.—One hundred and seventy-four distinct recommendations were made in the 16 printed reports. These involved changes in the form and content of contracts and in the method of drawing and awarding them; the introduction or better conduct of tests, inspection or other checking devices; administrative reorganization, including changes in administrative authority, changes in the powers and duties of officers and employees, the elimination of unfit or useless employees from the service, the creation in certain cases of new positions, the increase in certain other cases of the working force; and the introduction or improvement of methods of audit and account.

Others dealt with improved procedure in the issue of certificates, permits and licenses; economies in the house of correction and the police department, and in the cost of street repair; changes in the method of preparing the annual city budget; changes in the character and use of official publications and statistical data; for the extension of civil service to certain positions or the introduction of efficiency methods in dealing with the employees of the city; for remedy or recovery because of faulty construction work on unfulfilled contracts; for changes in the collection of fees or of other compensation to the city; for the elimination of political influence from the service. (An analysis of the work of the commission has been prepared by Dwight L. Akers, assistant secretary of the Chicago City Club and published in the *City Club Bulletin*, Volume IV, No. 17.)

Bureau of Public Efficiency.—In its report on "Methods of Preparing and Administering the Budget of Cook County," the Chicago Bureau of Public Efficiency recommends that there should be public hearings on the county budget, at which the humblest citizen of the county may be heard and register his objections to the amount of money to be appropriated or the purpose for which it is intended; that the county budget be standardized, grouping departments and institutions according to functions and classifying accounts in all departments under uniform titles; that departmental budget estimates be furnished on uniform blanks in answer to uniform questions; that the circuit judges be provided with funds to make an independent investigation of the needs of each department before they endorse the requests of the heads of the departments for help and funds; that departmental estimates be published in pamphlet form and distributed to civic and other interested organizations as a matter of information before the public hearings are held; that a more definite and restrictive wording to the appropriation bill be adopted; that the sys-

tem of accounting be revised so that the unexpended and unincumbered balances of each appropriation may be shown at any time.

The report also declared that no sufficient means exist at present for maintaining proper auditing or accounting control over supplies, materials or equipment, and that thousands of dollars charged against supplies have been expended for other purposes.

Milwaukee's Bureau of Economy and Efficiency is due to the action of the common council which directed its committee on finance, by the employment of experts and clerical and other assistants, to investigate the systems of accounts of all departments of the city and their operations and activities, and recommend uniform systems of accounting, etc.; and appropriated funds for the prosecution of such work. The general scope of the work of the bureau has been broadened so as to include a study of the social and economic conditions within the city as well as of the economy and efficiency of municipal departments. This social survey is inquiring widely into the conditions of living within the city. Studies are being made of health and sanitary problems, housing conditions, accidents to workmen, standards of living and kindred subjects, and definite plans will be proposed for the advance of the city to the best social conditions. The survey of business efficiency inquiries into the organization, administration, accounting, finance, business practice, construction and operation work performed by the various departments of the city government, and will work out economical and efficient business systems for these departments. The social survey is not an exhaustive investigation intended to expose conditions or to furnish material for social philosophy, but a means of measuring the efficiency or discovering the inefficiency of city government. It is based on the principle that the municipal government is a social corporation conducted for the health, welfare and prosperity of its inhabitants. Consequently, the measure of its efficiency is the extent to which it makes its resources go in promoting health, wealth and prosperity.

The social investigation discovers actual conditions; the efficiency investigation determines means and measures for dealing with them. This latter is a thorough study of the work performed by departments for the city, to be followed by a reorganization of procedure along lines of the greatest economy and efficiency. In the conduct of its executive departments the city is simply a business corporation, and efficiency in the work of these departments is to be secured by exactly the same general methods as in private corporations. The bureau is, therefore, following the lines of investigation and reorganization that have been developed in the efficiency work of business experts and efficiency engineers for the most progressive of private industrial corporations. (See XXXII, *Industrial Management.*)

St. Paul.—At the request of the mayor of St. Paul, the president of the Commercial Club, early in 1910, appointed a committee of ten citizens to make an investigation of the various methods of the city's government. The commission required $5,000, and after the May election the total amount was subscribed and the commission got under way. Everyone who had a "kick" was asked to submit the same for investigation at public meetings held to hear complaints. Few came, however, because the papers withheld their support and gave no adequate notice of the meetings. The school board asked the commission to make an investigation of the school textbook situation, because of the imbroglio in the school board in this matter. The mayor asked the commission to investigate the board of Water Commissioners; the comptroller asked assistance in budget making. In a year and a half the main work of research accomplished was first an examination of reports and accounts; second, an interrogation of the heads of departments and their subordinates by experts. The results have been published in a voluminous report with a series of specific recommendations for "the more

efficient and economical administration of the city's affairs."

Costs of Research Work.—An idea of the extent of the work and activities of bureaus of research may be gathered from the following figures showing the cost of the maintenance of the bureaus in the cities mentioned: New York, $91,470, $87,660, $100,000 in 1908, 1909, 1910, respectively; Chicago, $55,000 in 1910; Philadelphia, $25,000 and $30,000 in 1909 and 1910, respectively; Cincinnati, $10,000 in 1910; Memphis, $12,000 in each of the years 1909 and 1910; Milwaukee, $25,000 in 1910. In New York a greater portion of the expense is contributed by about one dozen citizens, although there are between 100 and 200 smaller contributors. In Chicago 14 men subscribed $114,000 and an additional $3,000 was sent unsolicited, this sum to carry the work through two years. The Philadelphia bureau is supported largely by the contributions of a small number of men, as is the case in Cincinnati. The cost of the Memphis bureau was obtained principally from small subscribers. Milwaukee is the only other city besides Boston which supports a municipal research bureau by public funds, $25,000 being appropriated by the common council for this purpose.

MUNICIPAL ACCOUNTING

The work of bureaus of research has been adequately outlined in certain typical instances. There has been no diminution in their activities in any of the cities, although there is a tendency on the part of some of their supporters to overstress the importance of accounting as a means of reorganizing municipal administration. Bodies like the National Municipal League and the U. S. Census Bureau for upward of a decade have insisted upon the necessity not only for uniform accounting and reporting, but for the coordination of financial with physical statistics as a basis for the determination of cost and as a means of increasing efficiency. At the same time, it seems a mistake to claim, as a recent writer did, that "accounting ought to commend itself to advocates of better administration as being the *only* means of identifying results and making remedies effective."

Massachusetts City Indebtedness.—Charles F. Gettemy, Chief of the Massachusetts Bureau of Statistics, reported to the Senate in 1911 that in 15 cities and 156 towns examined by his department in response to its order there was a total of $1,124,231.98 municipal indebtedness and no provision for meeting it. Wholesale and indiscriminate borrowing from individual, trust funds, cemetery funds, had plunged the cities and towns of the commonwealth into hopeless confusion from which the legislature will have to rescue them. Mr. Gettemy intimated that there is a shadow of illegality resting upon some of the loans made apparently in accordance with the law. Borrowings amounting to nearly half a million had been made from trust funds left for town improvements, but appropriated by the towns for current expenses. Towns are paying 6 per cent. upon these misappropriated funds. Several towns have asked for legislative permission to refund. In some cases, however, refunding must be gradual so as not financially to wreck the present taxpayers. The proposition for a state finance commission was urged to meet the situation. Ex-Attorney-General Malone ruled that towns which have borrowed in this way must regard such borrowings as narrowing their debt limit, making it impossible for them to borrow further without legislation.

Philadelphia's New Report.—Controller John M. Walton for several years has been giving especial attention to the reorganization and the restatement of the city's accounts. In his annual estimate to councils sent to that body in the

summer of 1911 he reported that the sum total of his endeavors in revising the accounting system of the city was to place the city's financial records upon a basis showing (1) assets and liabilities and (2) revenue and expense, without disturbing (3) the excellent receipt and expenditure system of accounting that the city has been using for years. The balance sheets and operation accounts present only the totals of each class of accounts, and afford the basis for intelligent comparisons from year to year by providing those in charge of the city's affairs, as well as the public, with condensed statements showing in perspective the city's financial condition.

To summarize, the asset and liability, revenue and expense system of accounting provides for complete accounting control over city property (land, structures, non-structural improvements and equipment), materials and supplies in stores, work in progress, and current liabilities, from the issuance of an order for service or supplies to the drawing of the voucher and warrant in payment for the same. The receipt and expenditure accounting system only provides a control over the city's cash. The asset and liability, revenue and expense system of accounting unifies the accounting system of all the departments of the city and county government, and through a system of current reporting it centers accounting control for property, materials, supplies, and current liabilities, as well as cash, appropriations and contracts, in the controller's office.

San Francisco's Accounts.—A preliminary statement of the general plans and probable recommendations for the accounts of the city of San Francisco by a committee of certified accountants appointed by the Merchants' Association (since merged in the Chamber of Commerce) to examine the city's financial methods has been made by Chairman Anson Herrick, as follows:

(1) The placing of the accounts of the city upon a revenue and expenditure basis, as against the cash receipt and disbursement basis employed at the present time; which modification will make it possible to exhibit the expenditures and revenues as against the periods during which they were incurred or earned.

(2) The requirement of an accounting for properties, so that the materials and equipment used will constitute a part of the cost of the service performed at the time of consumption.

(3) The exhibition of costs to the greatest extent practicable so that the taxpayer may be in a position to determine the relative efficiency of different administrations.

(4) The maintenance of records which will at all times exhibit the entire liabilities, current and funded, and the entire assets of the city, both fixed and floating.

(5) The classification of revenues and expenditures in such a manner as to permit of accurate and intelligent comparison with the revenues and expenditures of other cities of like character.

Municipal Accounting Officers.—An important feature of the annual convention of the National Association of Comptrollers and Accounting Officers at Washington was the arrangement made through the Census Bureau for a conference in September of the heads of the departments of uniform municipal accounting of the states of Iowa, Indiana, Ohio, New York and Massachusetts, the National Fund for the Promotion of Efficient Municipal Accounting, the Cincinnati Bureau of Municipal Research, and the National Municipal League. The purpose of the meeting was to determine a uniform budget classification for cities. The benefits to be derived from this work would be a uniform basis of comparison for municipal operative costs between over 300 cities in the five states, and the adoption by these states of the best budget classification known to municipal experts, with the consequent improved control over expenditures and consequent promotion of economy. The Census Bureau was made the clearing house for the convention. A subsequent conference for the furtherance of the same purpose was held in Columbus a month later.

CITY PLANNING

The Third National Conference on City Planning was held in Philadelphia on May 15, 16 and 17. It was an event of significance, marking the great advance of the movement for intelligent, definite planning of cities. Previous conferences had been held at Washington, D. C., in 1909, and at Rochester, N. Y., in 1910. Philadelphia secured the third conference through the interest of Mayor Reyburn in city planning. This accomplished, he held in conjunction with it an exhibition similar to those previously held in Berlin, Düsseldorf and London; an exhibition that showed the American public how much in the way of the improvement of American cities had been and was being accomplished, and what foreign countries had done on similar lines. It was the first of its kind to be held under municipal patronage in America. It was held in the Philadelphia City Hall and all the expenses were borne by the city. Models, perspectives, photographs, plans and maps, illustrating the growth of city planning in America and Europe made up the exhibit. They illustrated the development of the modern Continental city, starting, as it did, in a more or less circular fortress; the marvelous growth of the boulevard system of Paris, the garden cities of England, the interesting municipal housing enterprises of Ulm, and the famous docks and urban improvements of Liverpool, Antwerp, Rotterdam, Bremen, and other cities which have studied long and accomplished much in this field of endeavor.

Apart from a few shining examples, logical, sensible city planning is of comparatively recent origin in America. Within the past half dozen years, however, as the AMERICAN YEAR BOOK for 1910 pointed out, some 60 cities employed experts to make more or less comprehensive plans for their betterment, and the original drawings prepared for many of these cities were exhibited. Among these were the drawings of D. H. Burnham and his colleagues for the reorganization of Chicago; the drawings of the McMillan Commission for the development of Washington; and the plans for the development and improvement of New York City, Boston, Rochester, Cleveland, Columbus, St. Louis, Minneapolis, St. Paul, Portland, Oregon, Denver, Des Moines, Iowa, and many other cities.

Philadelphia's "comprehensive plans" for the improvement of the city, prepared at the instance of Mayor Reyburn and now more fully studied and developed, formed an important constituent of the exhibition. Among them were plans for the splendid Parkway (the first building on which will be the great Free Library of Philadelphia), connecting the City Hall and Fairmount Park, the new art museum, the convention hall and stadium, the embankment of the Schuylkill River, docks for the Delaware and Schuylkill, and far-reaching improvements to the system of transportation. A corps of experts has been at work for two years upon the plans for the remodeling of the streets of Philadelphia, and their plans were shown for the first time in their entirety.

The exhibition marked an epoch in American city planning. It unquestionably meant the awakening of a vital interest in this subject, in the minds of the people of Philadelphia and of their visitors. For although the City Planning Conference is a body of technical experts, and its sessions are devoted to a discussion of technical detail, its meeting in conjunction with a popular exhibition and the intelligent exploitation of the Philadelphia plans gave to the meeting an unusual prominence. It served to show the American people both the necessity for intelligent planning of the city as a place in which to live and work and what has so far been accomplished.

American and British City Planning.—The impressions left by the City Planning Conference on the English delegates were most interesting. Thomas Adams, Inspector of the Local Government Board, in *The*

Municipal Journal of London, England, said:

There is a great difference between the "city planning" movement in America and the "town planning" movement in Britain. Whereas "town planning," as it is understoood and expressed in the Town Planning Act, is chiefly concerned with the future control of undeveloped areas in expanding towns and growing urban and rural districts, in America "city planning" has meant in the past propagation of ideas for creating civic centers, for improving existing means of transport and traffic routes, and for establishing elaborate systems of parks and playgrounds.

But the vital difference between American and English conditions is constitutional or legal, rather than architectural or engineering. As is well known, each state in America possesses what is practically home rule in all matters outside of what may be described as questions of imperial politics. This autonomy is much prized by each state, but is subject to a universal and practical cast-iron constitution, with which all state law must conform. The federal government has apparently no power to apply statutory powers to the country as a whole in regard to town planning. It remains for each state to legislate for itself, and as most states have been building up different local codes, and are apparently subject to different interpretations of the general constitution, there seems to be great perplexity as to how town planning could be applied and enforced by statute in any single state. Even if one state were to succeed it does not follow that the same law could be enforced in another state. Pennsylvania seems to have some general powers of town planning already in existence, but it has not yet been ascertained how far these could be enforced within the four corners of the constitution. This suggests America's chief difficulty in securing and enforcing town planning powers.

Chicago Plans.—As illustrative of what is being accomplished in practical city planning it is interesting to note that about three years ago some of Chicago's practical men of affairs came to a realization that the formless growth of the city, overcrowding and consequent congestion of traffic, tended to waste and to paralyze the vital functions of the city. A plan for a well-ordered and convenient city was produced by the Commercial Club of Chicago, an organization of 100 leading business men. The work of promotion was in charge of the Plan Committee of that organization, at the head of which was Charles D. Norton, lately Secretary to President Taft, and Charles H. Wacker. Upon Mr. Norton's removal to Washington, Mr. Wacker became chairman of this committee, and upon the appointment of the Chicago Plan Commission, Mr. Wacker resigned as chairman of that committee to become chairman of the Chicago Plan Commission, which was organized in 1909 by the appointment of the Mayor of 328 citizens from all walks in life, to study and devise an *official* plan for Chicago, using the Chicago Plan originated by the Commercial Club as a basis, and to provide for the needs of the present and direct the development of the city towards an end both practical and ideal. Walter D. Moody, who had been secretary of the Association of Commerce, was made the managing director.

The commission is doing everything in its power to educate the people of Chicago by newspaper publicity and illustrated lectures, to show the very great practicability and necessity of a plan for Chicago. In endeavoring to secure all the favorable publicity it can, the commission recognizes that that is a fundamental without which no plan can be realized.

Influence of the Chicago Plans.—According to William E. Curtis, the special correspondent of the Chicago *Record-Herald*, the German Kaiser is ambitious to make his capital the finest city in the world, and seizes every suggestion and every opportunity to promote its grandeur and perfection. He has been thoroughly stirred up by the plans for the improvement and beautification of Chicago prepared by Daniel H. Burnham and Edward H. Bennett of his office under the direction of the Commercial Club. Inspired by them the Kaiser has appointed a commission to prepare a similar plan for the city of Berlin based upon a future population of 10,000,000 in the year 2000. In his enthusiastic and impulsive way he has declared several times that the Burnham plans were the most perfect and satisfactory he had ever

seen, and expressed a profound regret that his capital is so solidly built up and lacks the lake frontage of Chicago, so that they cannot be applied more closely in the improvements he contemplates.

Chicago's Lake Front.—Chicago is establishing some forceful and valuable precedents in other directions. In the improvement of her lake front she is aiming to solve two problems at one and the same time: the disposition of certain forms of the city's waste and the making of a water approach and a suitable water front that will be a credit to the whole city. In the first place the plan involves the municipal ownership of Chicago's entire lake shore, with the establishment of a chain of public bathing beaches and yacht harbors, with bordering park strips. As an alderman, strongly endorsing what has come to be known as the "Wacker Plan," expressed it,

> The people of Chicago are entitled to the best that the shore of Lake Michigan can supply, and they will not be content until their beaches are made so beautiful, artistic and beneficial that they will attract to their cooling waters during the summer months not only the people from Chicago and from the countless fields and prairies of Illinois, but from the whole of Chicago's commercial empire, the great Mississippi Valley. Only then, and not till then, will Chicago have come into her own on the lake front.

The City Council with substantial unanimity has taken the preliminary steps in providing for the "making" of the necessary land. "Hundreds of acres of lands have been created by the Lincoln Park and the South Park commissioners," according to Alderman Foell, who introduced the necessary legislation, "and we are throwing away millions of cubic yards of material such as they used in this work." Some of it is deposited in the lake beyond the eight-mile limit as required by the recent federal act, and the rest is removed to distant portions of the city, in both cases at an unnecessary expense and with no resultant utilization of such material for any public purpose. This same federal act permits the dumping of this material behind suitable breakwaters. This disposition of it would result in the creation of large areas of immensely valuable land along the lake shore, ideally suited for public parks and playgrounds.

This resolution directed the corporation counsel to report upon the city's powers to empty its refuse behind the breakwaters as he proposed, and directed the commissioner of public works to report the amount of waste material suitable for this work, the cost of its removal by the present methods, the saving that would be made by the proposed methods, the extent of the land that could be created, and its value. It also asked whether such waste could not be used in filling in between the mouth of the river and Randolph Street, the land to be used in connection with the prospective harbor development, and whether the suggested mode of disposing of the city's waste could be used in conjunction with the commission's plan for the development of outer driveways.

A double-decked roadway connecting the north and south boulevard systems and separating the heavy team traffic from the light and pleasure vehicles is the other far-reaching plan upon which Chicago is now working. The plan contemplates the widening of Michigan Boulevard from Randolph Street to the river, the construction of a new bridge, and the continuation of a double-decked boulevard and teaming street, connecting the north with the south side. According to these plans, Michigan Avenue north of Randolph Street to the river will be widened to 130 ft. Just south of the present approach to the Rush Street bridge a teaming center will be created, in the form of a plaza about 222 ft. square. Branching off from this will be five driveways, so that the man with teaming to do in this part of the city will not be confined to any one line of traffic, but will have different ways by which he may reach his destination. Just across the bridge, on the north side, will be another plaza of this sort, to serve a similar purpose.

On the whole, this plan, although unique, represents a most satisfactory solution of an increasingly difficult problem. For as the *Record-Herald* has conclusively shown:

The congestion at Rush Street bridge and the approaches thereto is already great. The growth of business will steadily make it worse. The plan of a double-level roadway, with the other carefully worked out features, provides for the future as well as for the present. The board of local improvements has acted wisely in ordering estimates to be prepared. The talk of a "boulevard on stilts," of taxing the whole city for the benefit of North Shore motorists, of injuring property owners in the zone affected, is biased and groundless. The same sort of talk is heard in connection with every proposed improvement. No person who has watched for five minutes the traffic and confusion at Rush Street bridge still needs to be seriously told that the double-decked driveway would facilitate business and benefit industry even more than it would benefit "rich men driving in automobiles." Besides, present conditions are a disgrace to the city. The time has come to construct a proper and handsome link between the two "sides" and their boulevard systems.

These several plans are being advocated and worked out by the Chicago Plan Commission.

Boston.—Governor Foss of Boston has appointed a Commission on City Planning for Metropolitan Boston, with E. A. Filene as chairman. It is designed as a preliminary commission, to draft legislation providing a final commission with power. There is, however, an ordinance before the Boston City Council which, if adopted, will create for Boston proper a commission with these generous powers:

> It shall be the duty of said commission to plan such developments and improvements in the city of Boston as have to do with the structural and sanitary safety of buildings and all kindred matters usually included under the head of building laws; the prevention and relief of congestion of population and traffic; the control of fire hazard; the proper distribution of buildings for purposes of residence, manufacturing, trade and transportation; the beautification of the city, the preservation of its natural and historic features; the extension of water supply and sewage disposal; the preservation, development and management of lands and buildings for public uses; the co-ordination of transportation, whether of passengers or freight, and whether by railroads, railways, highways, or water; the development of water front; and the distribution of telephone, gas, electric light and other public utilities, and such other matters as may properly be understood to come within the scope of city planning.

The other members of the commission are John Nolen and J. Randolph Coolidge, Jr. It is to make its report in 1912. This confers no validity upon the plans that may be drawn, but it will insure a continuous service of expert minds and afford to lawmakers and executive a permanent non-partisan guidance.

Cincinnati's Civic Center.—A movement for a civic center in Cincinnati has been launched by the Chamber of Commerce, in connection with the development of a public hall and boulevard on the site of the present canal within the city limits. On the invitation of the Chamber of Commerce, a number of other local organizations have appointed committees to coöperate in the matter. The sentiment developed there indicated a desire to extend the movement to one of general city planning. Public officials are thoroughly in sympathy, and conditions are particularly propitious by reason of the fact that there are no large or expensive buildings to be removed at the canal site, which affords a broad space, and that under the laws of Ohio provision is made for excess condemnation. The Chamber of Commerce has also provided a Committee on Housing, which will meet in the near future.

New Jersey Law.—This movement is mentioned as typical of a large number of others which are in process of launching or development in the various cities of the country. The New Jersey Act of 1911 is typical of the enabling legislation that is being placed upon the statute books of the several states. It provides that it shall be lawful for the mayor of any city of the first class of the state to appoint a commission, consisting of not more than nine citizens of such city, to prepare a plan for the systematic and future development of said city, which said commission shall be known as the "City Plan Commission" and the members of which shall hold office for one year, and shall serve without pay. Such commission shall have the power and

authority to employ experts and to pay for their services and for such other expenses as may be necessary, to an amount not exceeding the appropriation as hereinafter provided. It shall be lawful for the board having charge of the finances of such cities to appropriate any amount not exceeding $10,000 the first year and not exceeding $10,000 any subsequent year that such commission may remain in existence, and to raise the money so authorized the first year by appropriating for that purpose any moneys in the treasury of such city not otherwise appropriated, or by issuing and selling temporary loan bonds or certificates of indebtedness, provided that such bonds or certificates shall be sold at public or private sale, after due advertisement, at not less than par, and bearing interest at not more than five per centum, and any subsequent year by providing in the annual tax budget for the sum appropriated.

Pittsburgh's Civic Commission has already published the reports of Messrs. Frederick Law Olmsted and Bion L. Arnold, on the transportation and down-town problems of the city which have received deserved and widespread attention because of the effective handling of peculiarly difficult problems.

Cleveland is attacking the great task involved in the adequate development of its lake harbor. A comprehensive plan which some regard as visionary has been submitted to the Chamber of Commerce by Charles Francis Wood, of Philadelphia and Cleveland. His plans look to the construction of an island 8 miles long and 3,000 ft. wide, stretching from Edgewater Park to Garden Park. This island of about five square miles will form a harbor large enough for the city's further development for many years to come. On the outside lake front a boulevard 400 ft. wide is planned to connect the two parks, completing the circuit of the present boulevards and adding 2 square miles to the city's present park area. Access for shipping to the inner harbor would be through two channels spanned by roll-lift bridges for railroad and park traffic. An outer harbor is also planned, to be protected by breakwaters. The details of this great scheme, computed to involve a cost of $100,000,000, are fascinating, and show how rapidly our ideas of municipal improvements are developing.

CONGESTION AND HOUSING

New York.—The Commission on Congestion of Population, appointed by Mayor Gaynor in May, 1910, presented its report in March, 1911. Dr. Benjamin C. Marsh, the secretary of the Committee on Congestion of Population in New York, as also of the State Commission on Distribution of Population, which is attacking the problem from the preventive side, served as secretary of the commission, thus correlating the work of the official body with the unofficial one. The report thus representing an unusual coördination of effort is justly considered one of the principal productions of the year in the realm of social-civic endeavor.

Conditions of Congestion.—Under this head the commission reported first, as to *density of population* per acre in large areas, that in 1905 a little over one-sixth of the city's population lived south of 14th Street in Manhattan, at a density of 306.8 per acre. In 1910 about one-thirteenth of the city's population were living at a density of over 600 to the acre. The commission pointed out, however, that it would be possible to have nearly ten and one-half million people, more than double the present population of the city with a density of only 50 to the acre, and housed in one and two-family houses and three-story tenements, with a small garden for most of the families.

Second, as to *block density*, in 1910 one hundred and five blocks in Manhattan had a density of over 750 to the acre, 28 blocks in the lower part of the Bronx had an average density of 414 per acre, three having over 600, and in the 16th ward of Brooklyn, 23 blocks had an average density of 401 to the acre, while three had a density of over 450 per acre, and one of 540.

Third, as to *room overcrowding*, the present tenement-house law permits two adults and seven children under twelve years old to occupy an apartment, with one room, ten by twelve feet, and two rooms, ten by seven. Many apartments and rooms have three to five occupants per room, frequently including two or more lodgers, and there is no systematic effort to prevent such room overcrowding.

Fourth, as to the *intensive use of land and heights of tenements*, in 1908, over one-fourth of the blocks in Manhattan were covered solidly by buildings or had less than 11 per cent. of the area not covered; in the built up sections of Brooklyn nearly one-fifth of the blocks and in the built up sections of the 23d ward of the Bronx, nearly one-fourteenth of the blocks were so occupied. In Manhattan about one-eighth of the tenements were six stories high or over; in the 23d ward of the Bronx about one-seventh were five stories or over, and in the built up part of Brooklyn, about one-ninetieth were five stories or more.

Fifth, as to *concentration of land values and land* exclusive of real estate of corporations and special franchises, in 1907, eight families, corporations and estates owned 5.42 per cent. of the total assessed land value of Manhattan. The same year the assessed land value of 71.5 acres of land owned by the Astors in Manhattan was nearly $70,000,000, while they owned 500 acres of land in the Bronx. Twenty-three families, estates and corporations owned about one-ninth of the total area of the Bronx. In 1910, 57 families, corporations and estates owned nearly one-sixth of the land in Richmond. One block in lower Manhattan secured nearly one five-hundredth of the increase in assessed land value from 1906 to 1908, and this block represented also in 1908 about one five-hundredth of the total assessed land value of the entire city.

Sixth, as to *nationalities in congested areas and blocks;* of the population living in blocks having in 1905 a density of 750 or over per acre, 30.15 per cent., or nearly one-third, were Russian born, 12.65 per cent. Austrians, 9.60 per cent. Italians, 4.21 per cent. Poles, 3.24 per cent. Roumanians, and 2.78 per cent. Hungarians, and 34.25 per cent. American born. There were of foreign born in Manhattan in 1905, practically 200,000 Russians, 155,000 Italians, 125,000 Irish, 115,000 Germans, 80,000 Austrians, 35,000 Hungarians, 25,000 Poles, 21,000 Roumanians, 10,000 Bohemians, and 33 other nationalities each having under 10,000.

Seventh, as to *industrial concentration;* of the 662,749 workers in factories in New York in 1906, 481,856 or over two-thirds were in factories in Manhattan on less than one-fifteenth of the city's area, while 321,468, about one-half, were located in Manhattan below 14th Street, on the east side, and 20th on the west, on about one-seventieth of the city's area. Of the increase of 3,060 factories in New York, from 1906 to 1909, 2,438 or about four-fifths, were located in Manhattan and the Bronx, and the vast majority were in Manhattan. In 1906, approximately one-eleventh of all the workers in factories in the city were located in the old 6th Assembly District near the center of Manhattan below 14th Street, comprising only 186 acres or less than one eleven-hundredth of the city's area.

Eighth, as to the *overcrowding of schools;* there were on Oct. 3, 1910, in Manhattan in public elementary schools, 425 classes having a register of 56 pupils and over, in the Bronx 165, in Brooklyn, 453, in Queens 29, and in Richmond 3 classes. There were in the entire city four classes having a register of between 88 and 101. There were in Dec., 1910, in New York, 328 schools having an average attendance of under 1,500 pupils, 73 of 1,500 to 2,000, 48 of 2,000 to 2,500, 19 of 2,500 to 3,000, and 40 of over 3,000. In Dec., 1910, 57,809 pupils, 10 per cent. of the total average attendance in the city, were on part time; in Brooklyn, 13.8 per cent.; in the Bronx, 23.7 per cent., and in Queens 11.7 per cent.

Ninth, as to *assessed land values* of congested blocks, it is often

claimed that for a good standard of housing for the wage-earning population land should not exceed a cost of 50 cents per square foot, but in 1910, of 2,372 blocks in Manhattan only 90 had lots with assessed value of $1 per square foot or less, only 169 had lots assessed for $3.50 per square foot or less. Land in all the other boroughs is relatively cheap.

Tenth, as to park conditions; in 1910, Manhattan had an acre of park for every 1,614 people, the Bronx one for every 104, Brooklyn one for every 1,674, Queens one for every 386, and Richmond one for every 1,374. All the large excursion parks, practically inaccessible to the workers of the city, are included, while a normal provision of park area would be an acre for at most every 500 people, and reasonably accessible to their homes.

The chief causes of the congestion of population were described to be: (1) poverty—the inability to maintain a decent standard of living; (2) concentration of factories and office buildings; (3) high rents; (4) lack of control over aliens in the city; (5) long hours of work, making it impossible for men to live at a distance from their work; (6) conditions of transit and an inadequate transit policy; (7) the lack of a city plan; (8) defects in the present system of taxation, which penalizes the man who constructs any kind of buildings, and rewards the land speculator who holds land out of use for the increase in value; (9) certain mistaken methods of administering public and private charities; (10) failure of the city to adopt a policy to attract people to the outlying boroughs.

The physical effects of congestion and room over-crowding were considered under three heads: physical, moral and economic. Under the head "physical" the commission pointed out that there are in New York City every year about 27,000 deaths from preventable diseases, including about 10,000 from consumption, and 28,000 new cases of consumption. The occupancy of overcrowded and dark rooms is responsible for many of these deaths. Dr. W. H. Parks of the Department of Health stated: "It is the opinion of all those that have studied congestion that we have increased sickness in overcrowded rooms and increased mortality among the sick; that is, not only more sick, but of those that are sick more deaths. This is especially true of communicable diseases." It was the opinion of physicians who appeared before the commission that if the occupancy of the dark rooms now legally occupied is permitted, the city shall continue to have about 28,000 new cases of consumption, and 10,000 deaths from consumption every year.

Moral Effects.—In regard to moral effects, the clerk of the children's court of New York County, stated before the commission that "congestion is responsible for a vast number of the cases that come into the Children's Courts of New York City, environment counts nine-tenths in the whole proposition of juvenile delinquency." The chief city magistrate stated: "I think there can be no question that the connection between congestion of population, especially in that form which it takes in the tenement houses, particularly the old style tenements, crime and delinquency, is very marked. The crowded living conditions in these small rooms, lack of personal privacy and separation of the sexes, must, in the very nature of things, beget conditions which conduce to immorality and the lack of self-respect."

Economic Effects.—With regard to the economic effects, the commission stated that "The most marked effects of congestion of population are upon rent and wages. The mere presence of a large population in certain sections, on account of the increased demand for housing accommodations, has the natural result of increasing the rent which is demanded; and of diminishing the wages in so far as the amount of work for which wages are paid does not increase. The high rents and the low wages have the effect of forcing the population to live in more and more congested conditions."

Recommendations.—Full statistics were presented by the commission in

illustration and corroboration of its statements and conclusions. Its more important recommendations were carefully and elaborately stated. The chief ones are given as summarized in *The Survey*.

Lot Occupancy of Buildings Other Than Tenements.—Requiring at the back of factories an open yard the width of the lot and of a depth equal to one-tenth the height of the building but not less than ten feet.

Height of Tenements.—Providing that height shall not be greater than the width of the widest street on which the building stands; no tenement shall be more than four stories high except south of 181st Street, Manhattan, except that one story may be added for every 15 per cent. of the lot area left unoccupied less than the present legal occupancy; requiring fireproof construction for tenements of four stories or 50 ft. height; limiting tenements in outlying districts to three stories and other buildings in proportion; modifying the tenement house law in regard to three-family tenements in such a way as to encourage construction of them.

Room and Apartment Overcrowding.—Making 90 sq. ft. a minimum tenement room (it is now 70), with one room in each apartment of at least 150 sq. ft. (now 120); a minimum per apartment of 600 cub. ft. of air space for each adult and 300 for each child under twelve, with a fine of $25 for each violation (it is now 400 and 200, respectively, per room); requiring the tenement house and health department to placard each apartment with the number of occupants permitted; requiring a license to take lodgers; creating a bureau of occupancy in the department of health to enforce the law against overcrowding.

Conditions of Labor.—Appointing a deputy state commissioner of labor for New York City with more factory inspectors; creating a city industrial commission of three persons appointed by the mayor from nominations by the employers' association, the labor unions, and one by the mayor himself, to investigate conditions, wages, and disputes; creating a series of employment offices through the state with a number in New York City, or a municipal employment bureau with at least one office in each borough; creating a national department of labor to give wide publicity over the country to the opportunities for work, and to conditions, wages, and permanency of employment in all sections.

Distribution of Factories.—Raising the cubic air space for each employee from 250 cub. ft. as at present, to 500 for each day and 600 for each night worker; improving the water fronts of each borough for use as factories, and warehouses; building freight lines to connect all boroughs; reducing charges for trucks on municipal ferries.

Parks, Playgrounds, Schools, Recreation Centers.—Acquiring land in advance of public needs, and in outlying boroughs dividing the cost among the property benefited, the borough, and the city; limiting schools outside Manhattan to 1,500 pupils and rooms to 40 seats; purchasing with each school yard area adequate to the needs of the children of the neighborhood; increasing instruction in physiology and hygiene and teaching children the results of room overcrowding; increasing school gardens, parks, playgrounds, and recreation centers.

Cheap Land and Good Cheap Housing.—Making the rate of taxation upon all buildings "half the rate of taxation upon all land and that this reduction be secured by an equal change in each of five consecutive years"; recommending that the city government consider a tax on unearned increment; terminating the existing perpetual franchises of transit lines "as opportunity offers, by forfeiture"; extending transit systems to utilize to their full capacity the subways, bridges, and elevated lines; running lines into all sections of the city whether or not they would pay at first, because they will be profitable in "conserving the general welfare and prosperity of the citizens"; extending the city lines to the Queens side of the Queensborough Bridge and through the Steinway Tunnel into the Borough of Queens; providing in all franchises for transfers; con-

structing a subway to the Borough of Richmond (Staten Island), and pending that to sell 40 tickets for one dollar on the municipal ferries; amending the rapid-transit law to give the Public Service Commission and city authorities powers over surface lines equal to those over rapid-transit lines; preparing a city plan by the Board of Estimate, including the following items: restricting factories to certain districts, providing transit and freight lines, determining the main lines and secondary lines of streets as suggested by Chief Engineer Nelson P. Lewis of the Board of Estimate and Apportionment, providing sewers and sub-structures for pipes, providing adequate sites for parks, playgrounds, recreation centers, and municipal buildings, acquisition of adequate land by the city for all public purposes; reducing streets in outlying districts to 30 ft. with houses set back 15 to 20 ft. from the curb in the hope of reducing rents; providing excess condemnation of land so that the city may acquire more than is needed for a specific improvement and resell or rent the surplus.

Health and Safety.—Empowering the Tenement House Department to vacate unsanitary and dark rooms pending structural changes and making the tenement house commissioner a member of the board of health; organizing a staff of medical inspectors to be assigned by the department of health to the tenement house department to pass upon cases of vacating unsanitary tenements or rooms in which there has been contagious disease; requiring that tenement walls be whitewashed every year; prohibiting or adequately regulating manufacture in tenement houses.

Charities and Public Outdoor Relief.—Creating a board of trustees of public outdoor relief to dispense such relief to the dependent members of families of consumptives, and to widows with children, provided they will move into wards with a density of not over 300 to the acre and live under conditions approved by the board; giving the comptroller supervision over all charitable institutions exempt from taxation; encouraging the removal from congested districts of charitable institutions except emergency hospitals and similar institutions; acquiring tracts of land for extending the work of the City Farm Colony and for teaching adults agriculture and gardening; urging private charities so to dispense their relief as to encourage distribution of population from congested districts and to encourage recipients to learn trades other than those of congested city life.

Immigration.—Legislation abolishing time limit on the government's right to deport aliens for cause; progressive measures looking toward the effective control over aliens by the federal government; encouraging immigrants to become farm laborers and discouraging their segregation in congested sections; preventing artificial stimulation of immigration; establishing city and state farms; publishing information as to opportunities to learn the English language; providing for immediate deportation of convicted aliens in order to relieve overcrowding in state penal institutions.

Delinquency.—Closing streets in congested districts during certain hours so that children may use them for playgrounds.

Public Squares and Buildings.—Providing each borough with at least one large area for public administration buildings and a series of civic centers.

Building and Housing Codes.—A clear distinction is drawn by social workers between a building code and a housing code or law. The former deals with a great many things, such as structural strength for theaters, warehouses, office buildings, etc. A housing law deals primarily with light, ventilation, sanitation, fire protection. Many of the cities in the country have adopted modifications of the New York law. These cities, according to some of the housing experts, are gradually learning that they made a mistake. Cleveland has become so thoroughly convinced of this that a committee of the Chamber of Commerce is now working with the city officials to make a wholesome change in a law which some of the less en-

lightened cities still regard as a model. The best law on the statute books at present is probably that of Columbus, Ohio, adopted by the council last spring. If properly maintained and enforced it will add much to the beauty as well as to the healthfulness of the capital city of Ohio. The distinctive point of the code is that it regulates the construction and use of dwelling houses as well as of tenement houses, guaranteeing to the tenant a minimum standard of light, air, yard, water, toilet facilities and general sanitary conditions.

Another good law is that passed by the Kentucky legislature in 1910 for Louisville. California adopted a new state law in 1911 which is a considerable improvement. These laws are all of them based upon the "Model Tenement House Law" drafted by Lawrence Veiller, the secretary of the National Housing Association, which held its first annual conference in May.

Housing is becoming increasingly important and the people are realizing this and organizing committees everywhere. Although in its infancy, yet in 1911 over 60 communities in the United States organized housing committees.

Chicago, Buffalo and Los Angeles are the three cities with the most recent building codes, that of Chicago being the most detailed and complete. Cleveland is at work revising its code and New York is taking steps along the same line, as is also Pittsburgh. Syracuse, N. Y., expects to have a new code adopted soon, having had a committee at work during the past year.

The gains reported from Chicago in the matter of housing are: (1) Provision for inspection of all new buildings by the sanitary department prior to their occupancy as tenements; (2) a rearrangement of that part of the code relating to tenement houses to make the material more intelligible and easy of reference; (3) a better definition of what constitutes a tenement house; (4) the requirement for filing of a plat to show the location of all buildings upon the lot so that this shall be a matter of record; (5) the percentage of the area of the lot which can be covered remains nearly the same, but there is one gain in the new requirement providing that in case the alley is only ten feet wide any building erected must be 16 ft. from the further side of the alley, thus giving in any case a clear space of 16 ft. instead of the minimum of ten; (6) a change of the provision where corner lots are divided so that there must be a free space; (7) an increase in the size of courts for three-story buildings except in the case of three-story buildings on 25-ft. lots. In all others there is a gain in the requirement of 8 ft. as the minimum width instead of 7 (or in the case of a lot-lined court a change from 3½ to 4 ft. as the minimum width). This gives as the minimum number of square feet in such courts 160 instead of 120; (8) a requirement for a court in one-story tenements; (9) a provision for better lighting of stairs by a well except in buildings on a 25-foot lot which are specially lighted from the front; (10) a slight gain in provisions for alcove rooms; (11) an increase in the height of habitable rooms in basements from 8 to 8 ft. 6 in.; (12) porches are not to be counted as clear space; (13) an exception as to the height of underground rooms which allowed lower rooms to be permitted for janitors has been eliminated; (14) minimum size of rooms has been raised from 70 to 80 sq. ft. except for the room over the front door.

Housing in several of its more important aspects was considered at the Richmond meeting of the National Municipal League.

The Philadelphia Commission had an exhibit in the City Planning Conference on block reconstruction, which has attracted considerable attention. Requests from ten cities for this exhibit and for data concerning it have been received. This commission was responsible for the passage of the act providing that every dwelling shall have one fixture or source of water supply except where such dwellings are on a court or common front yard and have no rear or side yard, when one fixture may supply three houses.

New York State Legislation.—Through the initiative of the New

York Committee on Congestion of Population the New York legislature passed at its 1911 session an act providing that the commissioner of labor shall prepare annually an industrial directory for all cities and villages having a population of 1,000 or more according to the last preceding federal census or state enumeration, to contain information regarding opportunities and advantages for manufacturing in every such city or village, the factories established therein, hours of labor, housing conditions, railroad and water connections, water power, natural resources, wages and such other data regarding social, economic and industrial conditions as in the judgment of the commissioner would be of value to prospective manufacturers, and their employees. If a city is divided into boroughs, the directory shall contain such information as to each borough.

VICE INVESTIGATIONS

Chicago.—Two reports on the social evil, embodying the results of two official investigations, have appeared in 1911. That of the Chicago Commission on Vice is generally regarded by social workers as the most important publication on this subject that has so far appeared. The first fact that the Commission sought to impress upon the citizens of Chicago was the fact that prostitution in that city is a commercialized business of large proportions, with tremendous profits of more than $15,000,000 per year, controlled largely by men, not women. To quote from the report:

> Separate the male exploiter from the problem, and we minimize its extent and abate its flagrant outward expression.
>
> In juxtaposition with this group of professional male exploiters stand ostensibly respectable citizens, both men and women, who are openly renting and leasing property for exorbitant sums, and thus sharing, through immorality of investments, the profits from this business, a business which demands a supply of 5,000 souls from year to year to satisfy the lust and greed of men in this city alone.
>
> We often forget that society owes much to the protection of the children. Those of mature years can be left generally to guard themselves; but in the case of youth and ignorance, society must take the part of the elder brother, and in many cases the part of the father as an educator and guardian.
>
> One of the sad spectacles in this great city is the night children who sell gum, candy and papers on the streets. Through small habits learned by loitering near saloons, and even in the rear rooms frequented by vile persons, they become familiar with the vulgarity and immorality of the street and learn their language and their ways of life. That children should be kept off the streets at night by the police and that parents should be impressed with the importance of the most strict supervision of the child's recreational hours, are two matters of the greatest moment in the protection of the child.
>
> The investigations by the commission show that messengers and newsboys have an intimate knowledge of the ways of the underworld. Their moral sense is so blunted as to be absolutely blind to the degradation of women and the vile influence of vicious men.
>
> The commission heartily endorses all attempts to provide healthful and carefully guarded places of recreation for the children. It does not sympathize with those who simply stand by to criticize without doing anything in a constructive way to provide something wholesome for that which may demoralize. Children must and should have amusement and recreation, and they will find it in some way. Let Chicago increase her small parks and recreation centers. Let the churches give of their facilities to provide amusement for children. Let the Board of Education extend its efforts in establishing social centers in the public schools.

The evil which the Commission investigated and reported upon at length was thus summarized by the Chicago Tribune:

> Graft, the shame of American cities, flourishes under the system that exploits vice.
>
> The saloon, a bad enough institution in itself, is degraded by vice.
>
> Vice preys upon children forced by poverty to earn their living in the streets. There are 3,931 of these children in the First Ward.
>
> Vice is responsible for the "race

problem" in great cities. The negro is forced by lack of other employment into the Tenderloin, and becomes a bad citizen.

"Red light districts" breed criminals and offer them havens of refuge.

Vice lies in wait for the innocent girl who comes to Chicago to earn her living. It surrounds her by almost irresistible temptations.

The general delivery window of the post office is a secret and safe way of spotting, inveigling and trapping young girls.

The great majority of young immigrant women are not given adequate protection after they reach the United States.

Among the remedies which the Commission urged were that:

State laws and city laws should be enacted making the resorts public nuisances, and expressly giving to any citizen the right to institute summary proceedings against them.

There should be relentless pursuit and prosecution of professional procurers.

There should be constant prosecution of all keepers and inmates of existing houses as well as owners of the property.

An identification system for women in resorts should be established by the state courts.

A law should be enacted providing a penalty for sending any messenger under 21 years of age into a disorderly house.

A second school for wayward girls, similar to the school at Geneva, should be established in Illinois.

The sale of liquor should be forbidden at public dances. Municipal dance halls should be established.

The city should acquire a farm on which a trade school and hospital can be established for unfortunate women.

Other suggestions were the establishment of a federal immigrant bureau to give protection to immigrant girls arriving in Chicago; investigation of certain classes of midwives, physicians, and employment agencies; provision for medical certificates before marriage; supervision of the children of unmarried mothers; the creation of a "Morals Commission" charged with the enforcement of the law relating to the social evil; strict surveillance of police; enforcement of the laws; a "moral police squad"; the use of public schools as social centers; better supervision and lighting of parks. The report proceeds:

To churches and other religious bodies:

Pastors and religious workers should aid in arousing public opinion against the open and flagrant expression of the social evil in this city. The churches should endeavor to counteract the evil influence in the community by opening rooms attached to the church buildings as recreational centers during week day evenings.

To parents:

Great emphasis should be placed on parental responsibility and upon the effects of Church and school in informing parents how to safeguard their children.

The commission, after exhaustive consideration of the vice question, recorded itself of opinion that divorce to a large extent is a contributory factor to vice. No study of this blight upon the social and moral life of the country would be comprehensive without consideration of the causes which lead to the application for divorce. These are too numerous to mention at length in such a report as this, but the commission did wish to emphasize the great need of more safeguards against the marrying of persons physically, mentally, and morally unfit to take up the responsibilities of family life, including the bearing of children.

The Very Rev. Walter T. Sumner, Dean of the (Episcopal) Cathedral, was chairman, and Edwin W. Sims, United States Attorney, was secretary of the commission.

Minneapolis.—The Minneapolis Vice Commission was appointed by Mayor James C. Haynes. It presented a report last summer. While in form it differs from the Chicago report, it reaches the same general conclusions as the latter—especially with reference to the question of administrative policy in handling public prostitution—and that is law enforcement or suppression rather than toleration or segregation. Believing that the citizen body in Minneapolis had already begun to feel the world movement against this deeply intrenched enemy, the commission did not "deem it necessary to deliver such a smashing

blow as did the Chicago commission with its terrible array of facts, and indeed our commission," in the words of the secretary, Eugene T. Lies, who is also secretary of the Associated Charities of Minneapolis, "felt that the latter had held up to the cities of the whole country a kind of mirror in which they could see as much of their degraded side as they cared to view. And for this great service, the debt of gratitude can never be paid."

The set of recommendations covered not only the subject of law enforcement and greater police vigilance, but called for definite cooperation of citizens with the police, regulation of downtown hotels and lodging houses, hospital provision for venereal diseases, and preventive measures, such as sex education, larger recreation facilities, better economic and industrial conditions, development of certain institutions and agencies of prevention and reformation, and lastly a permanent morals commission.

A Church Study of Fallen Girls.—A study was made by the Church Mission of Help in New York of 229 Church girls who are now or who have been in state or Church reformatory institutions or in the care of a Church society. The records have been searched, girls and parents interviewed and statements verified. As a result, from over 300 records collected from correctional institutions, 229 girls have been found who come within the limits of the Mission's inquiry—the Church girl who has gone wrong—the nationality and localities from which the girls have come, their health, mental condition and industrial life, the amusements in which they found pleasure, their homes or lack of homes, the absence of sex knowledge, all are noted. This study shows that charges of "vagrancy," "disorderly conduct," "common prostitute," stand against the names of those who not long before had been closely connected with some Church. Each tells a horrible story of degraded womanhood. Nearly half of these girls had been communicants. They are the discovered failures of the Church. How many have been involved in their degradation is not known. The Church Mission of Help, of which Dr. W. T. Manning, Rector of Trinity, is president, has been organized to do work which shall both prevent and rescue. Its definite objects are, on the one hand, the protection of the Church girl; on the other, her rehabilitation. It appeals to Christian manhood and Christian womanhood. The significance of the report lies in the facts which it gathers and the fact that it was prepared by a Church society. It can be had at the Society's office, 37 East 28th Street, New York.

POLICE

In New York the police question is a perennial one. Under the administration of Mayor Gaynor it has, at times, become especially acute. In the spring of 1911 there was not only, as usual when news is slack in other directions, an especial emphasis on crime, "a recrudescence of crime," but Magistrate Corrigan made specific charges of police shortcomings. Mayor Gaynor met these, first by questioning the motives of the accuser, then by attacking him. Later, however, he took occasion to defend his administration, pointing out what he had done to improve conditions, especially in connection with the enforcement of the excise laws, which require that every bar-room must have its window curtains drawn on Sunday so that the police can see what is going on within the place. If there is any violation of the law the police must file with the district attorney an affidavit with details of the violation he is expected to prosecute. Mayor Gaynor admits, however, and this is a confession which goes a long way to offset his opposition to police raids of such places, that his policy does not stop the sale of liquor in the landlord's inner room.

In defending his course the mayor maintains that it is difficult to enforce a law against the will of the community. The mayor estimates that an annual illegal levy of 3 to 4 millions has been eliminated by his excise policy. Police raids have been suspended, the police obtaining the

evidence through their secret service and preparing warrants for the arrest of the guilty persons. The charge that the administration is lax in apprehending criminals was met by a flat denial.

In one important respect Mayor Gaynor has, it is generally conceded, established a wholesome practice. At the beginning of his term he laid down the rule that appointments and promotions in the police and fire departments should be made in numerical order from the civil-service lists. That rule seems to have been uniformly followed. New York's experience in the past few years has brought to the front the question of the length of term for the police commissioner. As at present organized the rank and file of the force are irremovable and the head can be removed at will. In the opinion of some students of the problem, if the police commissioner were given a long term and a definite tenure he would be enabled to carry out a definite administrative policy and secure and retain the loyalty of his subordinates by possessing the ability to reward efficient service and to punish inefficient service. Under present-day conditions in America the head of the police department is seldom if ever a police expert. He is selected from civil life for business, social, or political reasons. He seldom has any peculiar fitness for the position, excepting in the mind of the man who appoints him and has no expert knowledge of police administration. The admirable German system of promoting an experienced police officer of a smaller city to the police commissionership of a larger city, has never been tried in this country.

Chicago.—Mayor Carter H. Harrison, of Chicago, has instituted a vigorous investigation of the police affairs of that city. In a letter to the Civil Service Commission, dated Sept. 5, 1911, he said:

> Charges have been rife in the local press to the effect that a criminal conspiracy exists between certain commanding officers of the police department and certain gamblers. It is openly charged that money is paid by these gamblers to some agent acting for members of the police department, to secure protection.
>
> Every commanding officer of the police department with the exception of one, as far as my knowledge goes, has secured his appointment through the agency of the Civil Service Commission. Your office is to-day undertaking a systematic examination into the efficiency of various classes of city employees. Is there any place where better work could be done than by attempting to ferret out the truth or falsity of these charges? Your Commission can subpoena witnesses and take testimony under oath. If there is a lack of sufficient evidence to show the truth of these charges, it is due to the police department of the city of Chicago that its good name be cleared of an unjust imputation of guilt. On the other hand, if the testimony collected shows that the charges are true, it will be possible for your Commission to rid the force of men whose presence on it is a disgrace to it.

Acting upon this suggestion the commission undertook an immediate inquiry concerning conditions in the police department to determine the truth of the charges and to report fully upon such conditions as may be shown to exist, tending to impair individual and departmental efficiency. The inquiry has been conducted in accordance with the provisions of the civil service act and it is expected to be thoroughgoing. Whether, however, it will result in an overhauling of the system and an inauguration of new methods is a question that can only be determined some time hence.

The social usefulness of the police is coming into prominence not only through the insistence of social workers, but through the work of police officials like Chief Kohler of Cleveland. Between three and four years ago when the latter took office he held advanced theories as to the treatment of first offenders and persons who committed crimes of comparatively trivial character. These he proceeded at once to put into effect. Soon after entering office he noticed that the station houses were filled with from 10 to 200 people a day, most of whom were quickly discharged. He asked, What good was there in it? What harm it did was plain. He determined on a new plan. On Christmas, 1907, he told the men under him to stop arresting first offenders on minor charges: "Warn them, send them home, but don't ar-

rest them." Where two men are fighting on the street in most cities both are arrested, locked up, and face the ignominy of a police court hearing with the neighbors there to look on. Many men are started wrong by this avoidable blow to their self-respect. In Cleveland the policeman separates the combatants, warns them, and sends them home. If the case seems doubtful to him, he takes them to a "sunrise court" in the police station, presided over by a lieutenant, who discharges them unless the situation clearly demands severer treatment. This method has proved eminently successful, and is now popularly known as "The Golden Rule." Some of its practical results are embodied in the chief's report for 1910, which may be considered as a document of both civic and social value to the municipal worker.

Police Administration.—Among the more significant events of the year along the lines of actual police administration may be noted the adoption and development of the finger print and Bertillon systems of identification, which have led to a much more effective prevention and detection of crime; the establishment in Chicago of a school for the instruction of patrolmen; the institution and successful administration of the stationary patrol posts in New York; the application of the motor patrol and the illuminated signal system. The system of recording and handling violations, devised by the Tenement House Commission in New York, represents a great advance in systematic police records. The excellent work of Prof. James W. Garner as editor of the *Journal of Criminal Law and Criminology* in placing before police officers and other citizens in that periodical authentic information regarding police administration and the enforcement of the criminal law in this country and abroad is another item calling for special mention.

FIRE AND FIRE PREVENTION

Two factory fires, one in Newark, N. J., and one in New York, in the first of which 24 lives of working people and in the second, 144, were needlessly sacrificed, appalled the country during the past year and in some measure aroused the American people to the need of fire and accident prevention. As a result it has been urged, and with justice, that the neglect of the fire danger is widespread. A campaign against fire, just as there is a campaign against tuberculosis, is now being urged. Some improvement can be secured by legislation. But the laws will have to be based on sound principles of fire safety and will have to take heed of what fire prevention science has already established as necessary precautions. They will have to set standards for new constructions and they will have to recognize the changed demands which changed occupancy, processes and populations make on structures.

Former Fire-Chief Croker, of New York, who was in charge of the department at the time of the "Triangle" fire, has recommended that on all such buildings there should be outside fire escapes, with sprinklers and fire alarms with telephone connections on every floor. Where possible the fire escapes should be of the kind known as the tower fire escape, brick lined in all cases.

In the same connection John Williams, the New York State Labor Commissioner, has made several recommendations, one of which is the substitution for the drop ladder on buildings of a counter-balanced stair to reach from the lowest balcony of the fire escape to the ground, the stair to be of sufficient slant to make it readily used by women. He also believes with Chief Croker that fire-escape balcony floors should be approximately on the level with the factory floors and that the exits from the factory to fire escape be fitted with doors to open outward and against the end rail of the balcony. More factory inspectors were needed. There are only 50 factory inspectors in New York to cover 60,000 establishments. Responsibility for the enforcement of the laws must be inescapably centered upon a public agen-

cy duly commissioned and adequately equipped to carry out the desired ends.

Following the Newark fire that city revised its municipal building code, the New Jersey legislature passed a "fire prevention" law, and the New Jersey State Commissioner of Labor retained a consulting engineer who advocated and secured the introduction of fire drills into factories and the installation of balanced ladders on all fire escapes. There have been numerous other improvements in both local and state requirements and a material improvement in their enforcement.

New York City and State were much less prompt and effective; in fact practically nothing definite in the way of more adequate laws or regulations has been done, although it is expected that the commission which was appointed as a result of the Triangle fire will make an exhaustive study of the difficult situation and probably secure the enactment of progressive legislation. (See XVI, *Labor and Labor Legislation.*)

It is a matter of prime importance that comprehensive, organized effort be made to check the fire waste. According to the president of the National Fire Protection Association, in his annual address, real fire windows, real fire doors and shutters, and various excellent forms of building materials are being installed; fire extinguishing appliances with their fittings and appurtenances are being constructed in accordance with recognized standards; electrical fittings of all kinds are being properly safeguarded, and the hazards of many gas and oil using devices are being reduced to a minimum.

In the president's judgment, perhaps no single agency has had a greater influence in making for these improved conditions than the National Fire Protection Association, an organization listing 90 of the principal national institutes, societies, associations and insurance boards as active members. Another important factor in the movement for fire prevention is The National Board of Fire Underwriters, which has prepared a model building code, which it distributes freely to officers of all municipalities who can be interested. It employs expert fire protection engineers who visit all of the principal cities of the country and make extensive reports on conflagration conditions. In Chicago it has built laboratories where tests are made and reports issued on various devices, materials, systems and appliances having a bearing on the problem of fire prevention.

F. W. Fitzpatrick, a Washington architect, has written extensively on fire prevention, and in this way has brought the subject home to a long list of organizations, and to the attention of a wide circle of individual readers. His latest contribution is in the form of an instructive paper on "Fire and Fire Losses" for the American School of Correspondence, being the first of a series of eight studies on the subject. Among other important publications on fire protection and prevention are a series of pamphlets issued by the National Fire Protective Association, and those of the Commission on Fire Prevention of the National Board of Fire Underwriters.

Among the other organizations giving attention to the question of fire losses and fire prevention during the past year have been the International Association of Fire Engineers and the Fire Marshals' Association of North America.

Fire horses are to go in New York within a year or two. The city will spend half a million of dollars during the next twelve months in "automobiling" its fire brigade. For a year the city has been testing ten automobile trucks, driven at times at high speed through blizzards and snows three feet deep, where horses would have been useless. The city has authorized the purchase of 150 autos at once, including 20 engines, 60 hose carts and 70 hook and ladder outfits.

Chicago commemorated the fortieth anniversary of the great Chicago fire of 1871 on Oct. 9 by a "Fire Prevention Day," the principal purpose of which was to impress upon the city and state the need of more attention to fire prevention and better facilities for the safeguarding of property from the "red plague."

NUISANCES

SMOKE

Chicago has been making officially, through its city smoke inspector, a painstaking effort to abate the smoke nuisance. As a result of a long investigation the inspector reported in Feb., 1911, that although the locomotives of the city use only 18.5 per cent. of the total coal they make 43 per cent. of the total smoke and over 50 per cent. of the total dirt. There are 2,200 miles of railway track within the city limits on which there are at all times at least 1,400 locomotives, which use 5,600 tons of soft coal daily.

Approximately 10 per cent. of all coal fired in a locomotive firebox is discharged from the stack in the form of cinders. Within the city limits of Chicago about 560 tons (14 carloads) of cinders from locomotive smoke stacks are dropped every day. The lowest average density of smoke produced by any one road is about 10 per cent., which is as low an average as is possible with locomotives using soft coal. Yet if all locomotives in Chicago maintained this low average their smoke would still constitute 29 per cent. of the total smoke of the city, and they would produce over one-third of the dirt. The average density in the city is 23 per cent.

In preparing this report Inspector Bird and his force made over 11,000 observations of Chicago locomotives during November and December. Over 3,000 observations were made of locomotives in Elgin, Aurora, Mendota, Kankakee, Harvey, Hammond, Joliet, and Streator. A census of boilers was taken. Reports were obtained and tabulated, showing the deliveries of coal to the different classes of consumers. Reports were obtained on coal consumption from the companies operating vessels in the river. Estimates of the amount of coal burned by locomotives in the city limits were made by all the railroads. Incidental to the main deductions many points of minor interest were determined. It was found, for instance, that the locomotives of the Wisconsin Central railway made the best record for smoke prevention with an average density of 10.76 per cent. The Chicago Junction Railway was the worst offender with an average density of 42 per cent.

Electrification of the railroads at their terminals has been urged by the Smoke Abatement Commission as the solution of the problem. This, it insists, would do away with the worst smoke offenders in the city. "With the smoke of steam locomotives eliminated, it would be a much easier task to compel factories, office buildings and other offenders to put an end to the smoke nuisance. So long as the use of soft coal by steam locomotives within the city limits is permitted smoke must be expected. Railroad terminal electrification is essential to a clean city."

To bring about this desirable result a committee has been appointed by the Chicago Association of Commerce to investigate the electrification of railroad terminals in Chicago. It consists of seventeen members. Four of the men on the committee were suggested by Mayor Busse: T. E. Donnelley, Chairman, Smoke Abatement Commission; Dr. W. A. Evans, Health Commissioner; Milton J. Foreman, Chairman, Council Committee on Local Transportation; Paul P. Bird, Smoke Inspector. The railroads are represented by four men; the Association of Commerce by nine.

This Committee is to guide the work. A chief engineer (Horace G. Burt) has been selected, and he will organize an engineering bureau to study the whole problem, and make reports and estimates covering the detailed work of electrifying the railroads. Mr. Burt's chief engineering assistants are L. H. Evans, of Chicago, and Hugh Pattison, who was employed in the electrifying of the New York terminals. The railroads of the city are jointly to take care of the expense of the investigation. The work is estimated to take from two to three years to complete.

Cincinnati.—It is not generally known that Cincinnati was the first city in the country, excepting Chicago, to take active steps to abate the smoke nuisance. In Nov., 1881,

the common council passed an anti-smoke ordinance; Chicago's was enacted several months earlier in that year. Congress put upon the statute books smoke abatement legislation to protect the city of Washington in 1899; New York and St. Louis followed in 1901; Philadelphia in 1904; Toledo and Pittsburg in 1906; Detroit and Dayton in 1907; Milwaukee, 1908; Louisville, 1909; Boston, 1910.

The Cincinnati ordinance of 1881 was not greatly dissimilar to the one of 1908, under which the Smoke Abatement League is now operating. Founded in 1906 in order to supplement the efforts of the city authorities, this League has gone steadily on with its work, endeavoring to awaken people by means of letters, calls, public meetings and newspaper articles to the need, the practicability and the value from every standpoint of this movement.

Cincinnati was the first city to establish a smoke abatement league. As a great manufacturing center the city needs cheap fuel, principally soft coal, for power and light; but the League maintains that this is not incompatible with the cause the League represents. Experience has conclusively shown that with care and skill, supplemented in some instances with various devices, all plants not hopelessly out of date may be run in nearly smokeless fashion most of the time.

Many manufacturers once strongly antagonistic, now as frankly admit that they are saving money because their attention has been called to conditions of which they were ignorant, conditions whereby they were not only making smoke of which their neighbors complained, but wasting money. Remedying these, they have made a two-fold gain. Nor has the cry "you will drive business plants from the city" had any effect. According to Edward S. Jerome, the superintendent of the League, so far as advised, not one manufacturing plant, not a single interest has withdrawn from the city, even to the suburbs, through undue pressure exerted upon them because of alleged smoke. There has been no campaign of persecution waged, scarcely one of prosecution; it has been one almost wholly of education. So far from driving industries, factories and inhabitants from their midst, an abatement of smoke is one of the best drawing cards for them all; for travelers, foreign and domestic; and for conventions and meetings of every description.

Minneapolis.—This city won a notable victory in its fight against the smoke nuisance in a decision handed down by the supreme court of the state in March, upholding the decision of the lower court and confirming the validity of the ordinance compelling railroads to use smokeless coal in their engines. The decision was in the case of the City of Minneapolis, respondent, vs. the Chicago, Milwaukee & St. Paul Railroad. The city won its contention in the lower court, but the case was appealed to the supreme court on the claim that the city had not the right to compel smokeless coal to be used in railroad engines when soft coal may be burned by stationary engines. The decision stated that there is an obvious difference in results between the two classes of engines and upholds the validity of the ordinance. The court held that regulations tending to prevent a nuisance, specifically the smoke nuisance, are an exercise of the police power of the state within constitutional rights. This power is delegated to the city by special legislation.

Boston has a new smoke ordinance that has been in practical operation just one year, and has accomplished important results in the way of improvement without causing friction. The law sets definite standards of smoke intensity and makes it plain what is allowed and what is not. There have been very few prosecutions, the appeal being made directly to the engineers or firemen and the conditions of the plant studied by experts who are able to advise or assist. The inspectors report that nearly all smoke is caused by ignorance and carelessness under conditions that are readily removed when the fault is made clear. It is the only statute in the country that provides for testing the density of smoke by the Ringelmann smoke charts, and the credit for its provisions is largely due to the Boston Chamber of Com-

merce, which gave very close attention to this matter, proceeding on the idea that it should not be of a drastic character, at least at the start, but increasing in its rigors over a period of three years, at the end of which time it was thought the concerns responsible for smoke-making would be educated to the standards sought to be attained.

The Ohio Legislature passed a bill giving to the cities of the state the power to cause any nuisance to be abated, to prosecute in any court of competent jurisdiction any person or persons who shall create, continue, contribute to or suffer such nuisance to exist; to regulate and prevent the emission of dense smoke, to declare the same a nuisance, and to prescribe and enforce regulations for the prevention thereof; to prevent injury and annoyance from the same, to regulate and prohibit the use of steam whistles, and to provide for the regulation of the installation and inspection of steam boilers and steam boiler plants.

The International Association for the Prevention of Smoke held its annual meeting at Newark, June 28. Among the important discussions was that dealing with the prevention of the making of smoke by railroads. The assistant engineer of motive power of the Pennsylvania Railroad maintained that there is much difference between a locomotive and a stationary engine and this fact the organization should understand. Too often, he insisted, smoke inspectors are not even skilled in stationary-engine problems. Much locomotive smoke, the speaker declared, is due to the necessity of quick firing in the roundhouse for unexpected service. Then, on the road, with a heavy train and an exacting public duty, as much as 6,000 pounds of coal an hour are consumed. A fireman, he said, cannot, under such circumstances, be as systematic and careful as a man at a stationary boiler. The speaker told of numerous mechanical stoking devices tried by the company without success, and the eventual trial of an underfeed device evolved in the railroad's mechanical department. Eighteen different designs have been attempted in seven years, so that the equipment now used is a product of evolution.

Daniel Maloney was chosen president of the association; J. P. Brown, Indianapolis, was chosen vice-president, and R. C. Harris, Toronto, was reëlected secretary. Indianapolis was chosen as the next meeting place.

American Railway Master Mechanics' Association.—Smoke prevention was discussed at the Chicago meeting of the American Institute of Electrical Engineers at Chicago in June and at the 44th Annual Meeting of the American Railway Master Mechanics' Association at Atlantic City in the same month. On account of the laws and regulations of large cities, relative to the prevention of smoke, the Executive Committee of the latter organization appointed a committee to collect from the various members such information as might be obtainable with reference to the prevention of smoke during the critical period of time when locomotives are being fired up at terminals. This Committee reported that smoke prevention is extremely difficult at this time. This is evidenced by the fact that most large cities specifically exempt from violations the smoke emitted from boilers while being fired up. Although only 33 roads replied to the Committee's circular of inquiry, among these were included many of the largest companies and especially those having terminals located within the large cities where the restrictions are most severe; hence it is believed that this subject has been more thoroughly canvassed than might otherwise appear. The various reports and the experience of the individual members of the Committee lead to the following recommendations:

Boiler Conditions Before Firing Up.—The best results are obtained by filling up locomotive boilers with hot water previous to firing up; the temperatures reported varying from 110° F. to over 200° F., the higher being preferred on account of aiding combustion and lessening the time required to raise steam in the boiler.

Where hot water is not available, the temperature of water in the boiler may be raised by injecting live steam below the water line; but on account of the loss of time, the heating of the

water, either before or while the boiler is being filled, is recommended.

Induced Draft.—Two roads reported the use of large fans, connected with the smoke jacks above the roundhouse roof, as a means for producing draft. One of these roads advises that this device was used and tested for a considerable length of time, but was found unsatisfactory and abandoned. The other road is still experimenting along this plan in connection with a "smoke-washer," and is not yet ready to report upon its results except as to its difficulty in the maintenance of the plant—the metal parts having been eaten out several times during the year's experiments.

All other roads report the use of a roundhouse steam blower and the locomotive blower used exclusively.

Methods of Firing Up.—From the reports it would appear that almost every combination of wood, fuel, oil, shavings, cobs, coke and bituminous coal had been used, with more serious objections to some than others. Several roads reported extensive trials of coke, but its use has been almost entirely abandoned because the ashes and gases emitted from the smoke jacks are much more objectionable than smoke when roundhouses are located near viaducts or high buildings; furthermore, it is almost impossible for employees to work in the roundhouse when engines have to be moved from under the smoke jacks to do necessary work, and also the cost of coke is greatly in excess of other fuels in most sections of this country.

While the smoke from wood varies considerably in accordance with the size, quality and amount used, still it is more generally employed for kindling fires than any other fuel where the greatest effort is being made to prevent smoke at such times.

The plan of raising steam to nearly working pressure by means of wood or coke alone has been tried by many roads, but abandoned when it was found that the same results could be obtained by adding bituminous coal carefully to wood fire after the temperature in the firebox had been somewhat raised.

In general the conclusion is, that although there are many devices for reducing the amount of smoke from locomotives after steam is raised and engines are working, and while it is possible by great care and attention on the part of the roundhouse force to reduce the amount of smoke emitted during this period, at the same time we find no practical way entirely to eliminate all smoke while firing up locomotives at terminals.

BILLBOARDS

The most important event of the year in the matter of the public regulation of billboards was the decision of the Supreme Court of Missouri affirming its previous decision sustaining the St. Louis billboard ordinance. The movement for the regulation of billboards in that city began in 1902 under a committee of the Civic League. The ordinance regulating billboards was passed by the Municipal Assembly in 1905 (approved April 7) as part of a revision of the Building Code occupying 123 pages in the city ordinances. Five sections of the code dealt particularly with signs and billboards, against the enforcement of the regulations of which an injunction was granted by Judge Douglass of the Circuit Court Jan. 20, 1906. The city appealed at once from the injunction and Division No. 1 of the Supreme Court rendered the well-known decision of March 1, 1910. Since one judge sitting in that division dissented, the company had the privilege of having the case passed upon by the Court *en banc.*

The sections of the ordinance in question required:

1. That no structure, building or shed may be altered, repaired or removed without a permit from the Commissioner of Public Buildings.
2. That various fees shall be paid for such alteration or repair, one dollar being the fee for every 25 sq. ft. of the area of a sign and one dollar for every 5 lineal ft. of a billboard.
3. That no rotten or unsafe sign be permitted in any place and that no sign exceeding 20 sq. ft. shall be erected on any building without a permit. None but metal signs may be attached to any building if larger than 3½ by 10. No sign shall project more than 18 in. over the building line, nor nearer

than 8 ft. from the ground or pavement, nor to interfere with any fire escape.

4. No billboard having more than 25 sq. ft. of area shall be erected without a permit from the Commissioner of Public Buildings and on his approval. No billboard shall exceed 14 ft. in height above the ground and there must be an open space of at least 4 ft. between the lower edge of the board and the ground. No billboard shall be nearer than 6 ft. to any building or the side line of any lot, nor nearer than 2 ft. to any other billboard, nor shall any such billboard exceed more than 500 sq. ft. in area, nor to approach the building or alley line nearer than 15 ft. Rotten or unsafe billboards are subject to removal.

The final opinion of Judge Woodson says in part:

In this general statement we might also add that there is but one virtue connected with this entire business, and that is the advertising itself. This is a legitimate and honorable business, if honorably and legitimately conducted, but every other feature and incident thereto have evil tendencies, and should for that reason be strictly regulated and controlled. The signboards and billboards upon which this class of advertisement are displayed are constant menaces to the public safety and welfare of the city; they endanger the public health, promote immorality, constitute hiding places, and retreats for criminals and all classes of miscreants. They are also inartistic and unsightly.

The amount of good contained in this class of business is so small in comparison to the great and numerous evils incident thereto that it has caused me to wonder why some of the courts of the country have seen fit to go as far as they have in holding statutes and ordinances of this class void, which were only designed for the suppression of the evils incident thereto and not to the suppression of the business itself. While advertising, as before stated, is a legitimate and honorable business, yet the evils incident to this class of advertising are more numerous and base in character than are those incident to numerous other businesses which are considered *mala in se* and which for that reason may not only be regulated and controlled, but which may be entirely suppressed for the public good under the police power of the State. My individual opinion is that this class of advertising as now conducted is not only subject to control and regulation by the police power of the State, but that it might be entirely suppressed by statute, and that, too, without offending against either the State or Federal Constitution.

MUNICIPAL ASSOCIATIONS

National Municipal League.—The seventeenth annual meeting was held at Richmond, Virginia, Nov. 13 to 16, and the following officers were elected for 1912: President, William Dudley Foulke; vice-presidents, Miss Jane Addams, Chicago; H. D. W. English, Pittsburgh; William Kent, Kentfield, Cal.; Camillus G. Kidder, Orange, N. J.; A. Lawrence Lowell, Harvard; George McAneny, New York; Charles Richardson, Philadelphia; secretary, Clinton Rogers Woodruff, Philadelphia; treasurer, George Burnham, Jr., Philadelphia; and a council to the number of forty. M. N. Baker was elected chairman of the Executive Committee.

The constructive work of the League is carried on through a series of committees: civic education, selection and retention of experts, city finances and efficiency, franchises, liquor question, municipal courts, municipal health and sanitation, municipal reference libraries and archives, police, school extension, taxation of benefits caused by excess condemnation. It also has a series of administrative committees, including a civic secretaries committee and an advisory committee. Its next annual meeting will be held in Los Angeles in June.

The League is publishing a series of books dealing with municipal topics. Three volumes have been published by D. Appleton & Co.; *City Government by Commission*, by Clinton Rogers Woodruff; *Municipal Franchises*, by Dr. Clyde L. King; and *The Initiative, Referendum and Recall*, by Prof. William Bennett Munro.

The American Society of Municipal Improvements held its annual meeting in Grand Rapids, Michigan, Sept. 25 to 27.

The following officers were elected for the year 1911-1912: President, E. A. Kingsley, Little Rock, Ark.; First

Vice-President, B. W. Briggs, Erie, Penn.; Second Vice-President, Edward H. Christ, Grand Rapids, Mich.; Third Vice-President, W. B. Howe, Concord, N. H.; Secretary, A. Prescott Folwell, 239 West 39th St., New York; Treasurer, E. S. Rankin, Newark, N. J.

The 1912 Convention will be held at Dallas, Texas, Nov. 12, 13, 14 and 15.

The American Civic Association held its annual meeting in Washington, D. C., December 14 and 15. The old officers, including J. Horace McFarland, President, William B. Howland, Treasurer, and Richard B. Watrous, Secretary, were reëlected.

The League of American Municipalities held its annual meeting at Atlanta, Ga., Oct. 4 to 6. The following officers were elected: President, John MacVicar, head of the Public Works Department of Des Moines and former secretary-treasurer of the League; first vice-president, James J. Keeley, city alderman, Jackson, Mich.; second vice-president, L. A. La Pointe, city alderman of Montreal and member of the Canadian Parliament; third vice-president, John H. Donnally, city alderman, Newark, N. J.; fourth vice-president, Charles S. Lambert, mayor of East St. Louis, Ill.; secretary-treasurer, Edward Schreiter, Jr., secretary of Michigan League of Municipalities, Detroit. The next annual meeting of the League of American Municipalities will be held in Buffalo.

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XII. TERRITORIES AND DEPENDENCIES

FRANK MCINTYRE

NEW MEXICO AND ARIZONA

Statehood.—The questions connected with statehood have overshadowed all other subjects. The constitutional conventions of New Mexico and Arizona met in Oct., 1910, and adopted constitutions which were ratified at elections held for that purpose. Certified copies were submitted to Congress and the President for approval, in accordance with the provisions of the enabling act. These constitutions were outlined in the YEAR BOOK for 1910. The President in his message of Feb. 24, 1911, transmitted to Congress the constitution of New Mexico with his approval.

Various resolutions with reference to these proposed constitutions were introduced in the House and Senate at the first or special session of the 62nd Congress which opened April 4, 1911, the most important being House Joint Resolution No. 14. This resolution provided that both territories be admitted to statehood with their constitutions as adopted by the constitutional conventions, on condition that at the time of the election of state officers, New Mexico should submit to its electors an amendment to its new constitution altering and modifying its provision for future amendments, and on the further condition that Arizona should submit to its electors, at the time of the election of its state officers, a proposed amendment to its constitution by which the judicial officers should be excepted from the section permitting a recall of all elective officers. This resolution was agreed to with slight modifications and sent to the President for approval.

In a special message the President on Aug. 15, 1911, returned House Joint Resolution No. 14 to the House of Representatives, without approval, saying with reference to the proposed constitution of Arizona adopting the recall of elective officers and leaving it to the people of Arizona to modify it and to except judicial officers, "I must disapprove a constitution containing it." In other words, the President was unwilling to approve the constitution of Arizona with the judicial recall in it and leave the question of striking it out to the wisdom of the voters. (See also VIII, *The Recall.*)

Senate Joint Resolution No. 57 was then introduced on Aug. 17, adopted and approved by the President on Aug. 21, and this is Public Resolution No. 8 of the 62nd Congress, 1st Session. This provided that the voters of New Mexico should vote upon a substitute amendment proposed by this resolution to Article XIX of the proposed constitution providing for future amendments to it, as a condition precedent to the admission of the state to the Union; and that the voters of Arizona should vote upon and ratify and adopt a substitute amendment proposed by this resolution on the recall of elective officers, and excepting members of the judiciary, as a condition precedent to the admission of the state.

In accordance with this resolution and the enabling act, the governor of New Mexico issued a proclamation calling for an election to be held Nov. 7, 1911, for the purpose of electing the various congressional, state, legislative, judicial and county officers, authorized by the constitution previously adopted; also for the pur-

pose of amending Article XIX of the constitution adopted by the constitutional convention by substituting the amendment proposed in Public Resolution No. 8.

In Arizona, the governor issued on Sept. 20, 1911, a proclamation calling for an election on Dec. 12, for the various congressional, state, legislative, judicial and county officers, providing also that at said general election the people vote upon and ratify and adopt the proposed amendment to the constitution of Arizona. Both New Mexico and Arizona ratified the amendments and are thus admitted to statehood.

ALASKA

In the YEAR BOOK for 1910 it was said:

> The development of Alaska is retarded by lack of an efficient form of government for the district, and by the deadlock between those favoring the rapid development of the territory and those standing for a strict conservation of the resources. There seems little doubt that the resources of Alaska have attained in the public mind a grandeur out of proportion to the real value of these resources when their location is considered.

The Ballinger Controversy.—Unfortunately, this deadlock has continued. Charges having been publicly made that by improper means and the use of improper influences approximately 12,800 acres of land reserved in the Chugach National Forest, Alaska, had been restored by the President for disposition under appropriate land laws, and that this restoration was made in the interest of the Controller Railway & Navigation Company, the Senate on June 27 adopted a resolution requesting the President to transmit to the Senate all documents in the executive departments bearing on this matter. In compliance with this the President, under date of July 26, transmitted the papers requested with a letter in which he reviewed fully the charges which had been made and assumed full responsibility for the action which had been taken with reference to this restoration of land reserved for forest purposes to the public domain.

This charge had been based largely on an alleged postscript to a letter of July 13, 1910, addressed by Richard S. Ryan to Secretary of the Interior Ballinger. With reference to this the President said:

> Stronger evidence of the falsity and maliciously slanderous character of the alleged postscript could not be had. Its only significance is the light it throws on the bitterness and venom of some of those who take active part in every discussion of Alaskan issues. The intensity of their desire to besmirch all who invest in that district, and all who are officially connected with its administration, operates upon the minds of weak human instruments and prompts the fabrication of such false testimony as this postscript. I dislike to dwell upon this feature of the case, but it is so full of a lesson that ought to be taken to the heart of every patriotic citizen that I can not pass it over in silence.
>
> When I made this order I was aware that the condition of public opinion in reference to investments in Alaska, fanned by charges of fraud—some well founded and others of an hysterical and unjust or false character—would lead to an attack upon it and to the questioning of my motives in signing it. I remarked this when I made the order, and I was not mistaken. But a public officer, when he conceives it his duty to take affirmative action in the public interest, has no more right to allow fear of unjust criticism and attack to hinder him from taking that action than he would to allow personal and dishonest motives to affect him. It is easy in cases like this to take the course which timidity prompts, and to do nothing, but such a course does not inure to the public weal.
>
> I am in full sympathy with the concern of reasonable and patriotic men that the valuable resources of Alaska should not be turned over to be exploited for the profit of greedy, absorbing, and monopolistic corporations or syndicates. Whatever the attempts which have been made, no one, as a matter of fact, has secured in Alaska any undue privilege or franchise not completely under the control of Congress. I am in full agreement with the view that every care, both in administration and in legislation, must be observed to prevent the corrupt or unfair acquisition of undue privilege, franchise, or right from the government in that district. But every one must know that the resources of Alaska can never become available either to the people of Alaska or to the public

of the United States unless reasonable opportunity is granted to those who would invest their money to secure a return proportionate to the risk run in the investment and reasonable under all the circumstances.

On the other hand, the acrimony of spirit and the intense malice that have been engendered in respect of the administration of the government in Alaska and in the consideration of measures proposed for her relief, and the wanton recklessness and eagerness with which attempts have been made to besmirch the characters of high officials having to do with the Alaskan government, and even of persons not in public life, present a condition that calls for condemnation and requires that the public be warned of the demoralization that has been produced by the hysterical suspicions of good people and the unscrupulous and corrupt misrepresentations of the wicked. The helpless state to which the credulity of some and the malevolent scandalmongering of others have brought the people of Alaska in their struggle for its development ought to give the public pause, for until a juster and fairer view be taken, investment in Alaska, which is necessary to its development, will be impossible, and honest administrators and legislators will be embarrassed in the advocacy and putting into operation of those policies in regard to the Territory which are necessary to its progress and prosperity.

Secretary of the Interior Fisher, visited Alaska during the summer and on his return declared Controller Bay to be neither the only nor the best harbor for the output of the Bering River coal fields. He expressed himself as favoring the opening and development of the coal fields and suggested the leasing of the coal lands under the system which has worked so well in Australia and New Zealand and parts of Canada. (See also IV, *The Conservation Question.*)

Government by Commission.—The President, in a speech of Oct. 9, stated that the development of Alaska was being retarded by lying reports as to its wealth; that he favored a government by commission for Alaska but that, in view of the wishes of the people of that district, he was willing to compromise on a partially elected and partially appointed commission. He felt that Congress was too far distant from Alaska to legislate to meet the local necessities of that district. He expressed himself as favoring leasing the coal lands in Alaska in about the terms used by Secretary Fisher.

Governor Clark, of Alaska, recommends the passage of a quarantine law, a sanitary code, a bank supervision law and legislation for the relief of destitute persons, for the registration of vital statistics and compulsory school attendance. Under the form of government outlined by the President all these would be matters to be regulated by the commission in Alaska and would not require consideration by Congress.

Exports.—The exportation of Alaskan products to the United States for the last three fiscal years has been as follows:

	1909.	1910.	1911.
Gold.....	$17,558,839	$18,275,434	$15,081,620
Fish and fish products...	10,824,950	10,404,807	11,175,712
All others	2,239,856	1,949,307	2,638,112

PORTO RICO

The bill referred to in the 1910 YEAR BOOK, the new organic act or constitution for Porto Rico, was not taken up in the Senate.

Political Conditions.—In Sept., 1911, Henry L. Stimson, Secretary of War, accompanied by Gen. Clarence R. Edwards, Chief of the Bureau of Insular Affairs, visited Porto Rico to inspect conditions of the island administration. The Secretary found that the recommendations of his predecessor, made after his visit in 1909, having been without result in obtaining legislation, political conditions did not differ greatly from those reported by Mr. Dickinson, outlined in the YEAR BOOK for 1910. He found, however, apparently less interest in pressing for political changes and a comparatively greater interest in the material affairs of the island. This was perhaps due, in part, to the great prosperity of the island and, in part, to the direction given to the thoughts of the people by the local administration.

U. S. Citizenship.—The demand for United States citizenship continues to be practically universal and disappointment at the failure of the United States to grant it has led to some loose talk of independence in a certain section of the island press. This, of course, has no weight with the material men of the island, who know the immense advantages which they receive from their connection with the United States.

Legislation.—Congress passed no legislation of importance with reference to Porto Rico during the year, but the year was one of great activity on the part of the local legislature. At the suggestion of Secretary of War Dickinson, Judge John W. Judd, of Tennessee, was appointed special counsel to assist the Attorney-General of Porto Rico in an executive investigation of the outstanding franchises in the island and of the suitability of the laws affecting them. As a result of the report made by these officials, the legislature enacted a corporation law providing for the regulation and control of all public-service corporations and utilities. The legislature also enacted a general sanitary law which, in large part, was taken from the sections relating to sanitation in the general law which Secretary Dickinson submitted to Congress, as outlined in the YEAR BOOK for 1910. This sanitary law has not proven all that was desired. There has been conflict of authority between the Director of Sanitation and the Board of Health, and it is not unlikely that the law will be amended at the next session of the legislature or that Congress will provide a law of sanitation which will remove the question of health and sanitation in Porto Rico from local politics.

Education.—The continued progress in educational work has been notable. There was an increase of 20 per cent. in the number of pupils enrolled during the year as compared with the preceding year. The total enrollment was 145,525.

Exports.—The material progress in Porto Rico during the year is shown in the following table of exports to the United States and foreign countries:

Domestic Merchandise.	Average for 5 years preceding 1910.	1910.	1911.
Sugar....	$15,600,820	$23,545,922	$24,479,286
Coffee....	3,667,093	5,669,602	4,992,779
Tobacco and its products	5,473,273	5,763,214	5,396,783
Fruits and nuts	793,689	1,635,817	2,073,994
All others	372,832	1,343,664	2,946,310

THE PHILIPPINE ISLANDS

A general condition of peace and order has existed in the Philippines during the year. While there were several isolated murders committed by Moros in Mindanao and Jolo, there was during the year nothing which approached even a local outbreak or resistance to constituted authority.

Legislation.—The act of Feb. 15, 1911, providing for the quadrennial election of members of the Philippine Assembly and Resident Commissioners to the United States, was the only Congressional legislation with reference to the Philippine Islands passed during the year. Conforming to the spirit of this act, the legislature of the Philippine Islands passed an act providing for the quadrennial election of municipal and provincial officers. The first election under this new act will be held on the first Tuesday of June, 1912. Officers so elected will take office on Oct. 16 following their election.

July 4, 1911, was the tenth anniversary of the establishment of American civil government in the Philippine Islands. This tenth anniversary has been taken advantage of to take stock of the accomplishments under American rule. No American need apologize for what we have accomplished in the Philippines.

Law and Order.—American civil government in the Philippines was established before the smoke had cleared up from five years' continuous insurrection, war and guerrilla warfare. The first duty, therefore, was that law and order should be established. Among the first constructive acts of the Philippine Com-

mission were those organizing the courts, enacted June 11, 1901, and organizing the Philippines Constabulary, enacted July 18, 1901. The courts and the constabulary have been the greatest of the influences in the establishment of law and order and comparative good-will between the races in the Islands. Of these Gregorio Araneta, the Secretary of Finance and Justice, and one of the ablest Filipino lawyers, says:

> This success would not have been reached without an intelligent, upright, honest and impartial administration of justice and the active and efficient labor of the Philippines Constabulary.

Judiciary.—Of the seven justices of the Supreme Court in the Islands three, including the Chief Justice, are Filipinos; of the 29 Judges of First Instance, 14 are Filipinos. Practically all of the lower courts are presided over by Filipinos.

Education.—We have to-day in the Philippine Islands, 4,404 schools in which the English language is taught and more people speaking English than ever spoke Spanish or than can speak any one of the native languages of the Islands. We have in the public schools a teaching staff of 800 Americans and 1,100 Filipinos supported by the insular government, and 7,200 Filipino teachers receiving a salary from the municipal governments. Over 610,000 pupils were enrolled during the school year.

The University of the Philippines.—During the year 1911 the first class graduated from the University of the Philippines. While this institution was recognized by a law in 1908, it is now beginning to assume the proportion which its founders contemplated. It has in active operation the following schools: Medicine, Agriculture, Engineering, Law, Veterinary Science, Liberal Arts, Fine Arts, Pharmacy. During the year there were something over thirteen hundred students. This institution, with the splendid medical school now in full operation, bids fair to be the great English university of the Far East. The Philippines has to-day the distinction of having given a good start to the newest of our great universities, as it has also the oldest University under the American flag, the University of Santo Tomas founded by the Spaniards in 1619.

Sanitation.—In no way has the American government so shown its interest in the Filipino as in its effort to improve health conditions. It has installed in the city of Manila a splendid water supply and sewer system, and has now under consideration a similar system in the city of Cebu, the second seaport of the Islands. It has in operation 600 artesian wells furnishing a pure water supply in almost as many towns of the archipelago. It has segregated the lepers, numbering over 4,000, and has them established in a model colony on the Island of Culion. That this colony is appreciated far beyond the Philippine Islands is shown by a recent request of the British government to be permitted to send there the lepers of North Borneo. It has vaccinated practically the entire population of the Islands. It has established and has in operation the Philippines General Hospital, containing 350 beds, and has also under construction hospitals in the cities of Cebu and Iloilo. It has constructed a modern hospital building for the insane with facilities for the care of 500 patients. It has established a training school from which have graduated a number of Filipino nurses, though such a thing as a trained nurse was unknown among Filipino women ten years ago.

It has undertaken the free distribution of quinine, and by drainage and other methods of mosquito extermination has greatly reduced the incidence of malaria. It has in Bilibid Prison and the Iwahig Penal Colony a prison system which compares favorably with any in the United States.

Athletics.—Closely connected with the American development of health and education in the Philippines has been the growth of athletics. To-day every boys' school in the Islands has a baseball club and practically every form of athletics known to the American boy is enthusiastically indulged in.

Material progress. — The slowness of material development in the Philippines under American administration has been commented on. This is due to two causes: first, the failure to appreciate the really considerable progress made, and, second, the determined stand of the government to prevent harmful exploitation or progress so rapid that the Filipino could not profitably participate therein.

To assist in material progress the government has constructed 873 miles of first-class highway and 1,287 miles of second-class roads—this being about one-half of the road plan in contemplation. It has by encouragement and material assistance increased the railroad mileage from 120 to 564 miles. It has greatly improved the principal harbors of the Islands.

The government is giving to the Filipino youth industrial and agricultural training to enable him to progress and participate in the social and material progress of the Islands.

The President, as Governor of the Philippines, as Secretary of War, and in his present position, has stood for progress of the Philippines only when it meant progress of the Filipino people. This has been the policy in Congressional legislation. This is the policy which has prevented the introduction of Chinese labor which made the Malay States. Under this policy, of 60,000,000 acres of public land in the Philippines, 14,000 acres has been alienated in ten years.

With the Filipino better instructed as to his rights and better prepared to participate in the development of his country, there may well be a slight letting up of the restrictions which have held undeveloped, that he may profit therefrom, the forests, fields and mines of his country. Not the least or least difficult accomplishment of the American government in the Philippines has been the prevention of too rapid material progress.

The result of the 1909 tariff legislation is clearly indicated by the increased trade with the United States as shown in the following tables of imports and exports:

IMPORTS

	1909.	1910.	1911.
From the United States...	$4,691,770	$10,775,301	$19,483,658
From other countries....	23,100,627	26,292,329	30,350,064

EXPORTS

	1909.	1910	1911.
To the United States...	$10,215,391	$18,741,771	$16,716,956
To other countries	20,778,232	21,122,398	23,061,673

Eruption of Taal Volcano.—On Jan. 30, 1911, occurred an eruption of Taal volcano more severe than any during the history of the Philippines. This volcano rises out of Lake Bombon, forming a small island, and is about 39 miles south of Manila. Seismic disturbances were registered at the Manila Observatory as early as Jan. 27, continuing with increased intensity until the eruption at 1 A. M. Jan. 30, which was followed by a windstorm and by earthquakes lasting two or three days. Devastation was complete along the western shores of Lake Bombon. The number of killed is given as 1,335. (See also XXVII, *Earthquakes and Volcanoes.*)

Central Luzon Typhoon.—A typhoon of unusual extent and intensity swept north central Luzon from July 13 to 17, causing great damage to public works, crops, houses and telegraph wires. The rainfall during four days was 88 in., the greatest rainfall ever officially recorded for this period in any part of the world. The greatest injury was the partial destruction of the Benguet Road, the beautiful mountain highway to the summer capital at Baguio.

GUAM

Commerce. — The commander of the naval station continues to be the chief executive of the island. The past year has been a prosperous one and the finances are in good condi-

tion. The amount of copra, the mainstay of the island, exported during the year was 870 tons, valued at $51,050. The Japanese, the principal merchants of the island, export all the copra produced in the island and control the prices thereof. Imports during the year amounted to $140,326 and the duties collected amounted to $18,035. The revenues of the island government from taxes, fees, etc., amounted to $48,422, and the expenditures, to $34,222.

The business and prosperity of the island would be greatly increased were it possible to ship the products of Guam to Manila and to introduce goods from the Philippines. With that in view the governor has recommended the establishment of a service between Guam and Manila so that a trip will be made every three months. There is also need for a modification of the customs regulations so that foreign goods imported from the United States or its possessions be given a rebate on further shipment to Guam, and that foreign goods shipped through the United States or its island possessions be allowed to pass in bond, or if duty is collected, it be refunded on shipment to Guam. Under present conditions foreign goods brought to Guam from the United States or the Philippines are required to pay a second duty. During the year a new custom house was built through which all imports must pass.

Sanitation.—There is marked improvement in the health and sanitary condition of the people due to the introduction of water into Agana and into Inarajan, and to the constant fight of the medical officers against gangosa and hookworm. The Susana hospital is practically completed. There are now 24 cases of leprosy in the Tumon Colony, and it is the opinion of the governor and the doctors that all concerned would be benefited if the lepers could be removed to the Philippines leper colony.

Education.—The effort to educate the children has continued with gratifying results. Attendance is compulsory for all children on the island and the schools are crowded. School work is continuous through the year, the only vacation being about two weeks in June and a few special holidays.

Roads have been extended and repaired, which has resulted in the clearing and planting of many new tracts, especially in the planting of cocoanut trees.

The native population of the island is 11,877, an increase of 253 during the year.

TUTUILA

Commander W. M. Crose, U. S. N., was inaugurated Governor Nov. 10, 1910.

The general health conditions show improvement, but an epidemic of measles, a much-dreaded disease in the South Seas, visited Tutuila and Manua during the year. More than 3,500 cases were reported, resulting in 117 deaths in Tutuila and 51 in Manua.

The crop of copra, practically the only export, exceeds that for any previous year, and the financial condition of the island government is satisfactory.

There has been little or no improvement in the school system for some years and the schools compare very unfavorably with those of the Philippine Islands. There is an urgent need for more American teachers and special effort is being made to have English taught to the natives, which would be the greatest factor toward guiding them to civilization.

Urgent requests have been made for appropriations for the building of much needed roads in Tutuila.

HAWAII

Last year was a prosperous and rather uneventful year in Hawaii. The difficulty of obtaining suitable labor for the cane fields, which has for some time been chronic, continued throughout the year.

In Dec., 1910, the Chief of the Bureau of Immigration and Naturalization visited Hawaii to study labor conditions and was quoted in the public press as finding conditions there intolerable from an American standpoint. The effort to obtain la-

bor from the Philippine Islands has been continued and has resulted in some conflict between the Sugar Producers' Association, which brought the laborers to Hawaii, and the canning industries in Alaska by whose agents many of the laborers were induced to leave Hawaii.

The following table shows the values of the principal local products shipped from the islands in the last three years:

	1909.	1910.	1911.
Sugar....	$37,632,821	$42,626,069	$36,704,656
Coffee....	211,535	288,423	346,507
Fruit and nuts....	1,446,792	1,775,050	2,173,218

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XIII. ECONOMIC CONDITIONS AND THE CONDUCT OF BUSINESS

S. S. Huebner

BUSINESS CONDITIONS IN 1911

A Year of Declining Business.—In last year's discussion of "Business Conditions in 1910" (see 1910 American Year Book, page 377, etc.) it was explained that the bright prospects for increased trade, the hope of which was shared by nearly all the leading trade and financial journals at the beginning of the year, did not materialize, and that January of that year marked the highest point of industrial activity for the year, the tendency thereafter being one toward dullness and hesitation in most important lines of business. This declining tendency in trade and commerce is also the most noticeable feature in the business conditions of 1911; it prevailed during the entire year, and manifested itself in a more marked degree than in 1910. The business situation in 1911 cannot be characterized as a "business depression," especially when judged by the volume of business done as compared with the volume in recent normal

CROP PRODUCTION

	1907.	1908.	1909.	1910.	1911.
Corn.....bu.	2,592,320,000	2,668,651,000	2,772,376,000	3,121,381,000	2,759,300,000
Winter wheat.. "	409,442,000	420,218,000	432,920,000	458,294,000	455,149,000
Spring wheat.. "	224,645,000	244,384,000	290,823,000	233,475,000	200,367,000
Oats..... "	754,443,000	807,156,000	1,007,353,000	1,096,396,000	873,641,000
Rye..... "	31,566,000	31,851,000	32,239,000	32,088,000	30,677,000
Barley..... "	153,597,000	166,756,000	170,284,000	158,138,000	145,951,000
Cotton.....bales	11,571,966	13,825,457	10,609,668	11,500,000	14,000,000

PRODUCTION OF METALS

	Pig Iron (Tons).		Copper (Lb.). U. S. Production.		Copper. U. S. Visible Supply.	
	1910.	1911.	1910.	1911.	1910.	1911.
January.....	2,608,000	1,759,000	116,547,000	115,696,000	141,766,000	122,030,000
February.....	2,397,000	1,794,000	112,712,000	109,828,000	98,463,000	142,439,000
March.....	2,615,000	2,188,000	120,067,000	130,532,000	107,187,000	156,637,000
April.....	2,483,000	2,065,000	117,477,000	118,085,000	123,824,000	162,007,000
May.....	2,390,000	1,893,000	123,242,000	126,962,000	141,874,000	165,555,000
June.....	2,265,000	1,787,000	127,219,000	124,544,000	160,315,000	165,995,000
July.....	2,142,000	1,793,000	118,370,000	112,167,000	168,386,000	157,434,000
August.....	2,106,000	1,926,000	127,803,000	125,493,000	170,640,000	137,738,000
September.....	2,054,000	1,977,000	119,519,000	115,588,000	168,881,000	133,441,000
October.....	2,093,000	2,102,000	126,469,000	118,255,900	148,793,000	140,894,000
November.....	1,909,000	.....	119,353,000	.....	139,261,000	134,997,000
December.....	1,777,000	.....	123,339,000	.....	130,389,000	.....

years. Yet, 1911 furnishes evidence on every hand of a downward trend in business and security values. The situation may be best described by stating that business during 1911 has "marked time," while awaiting developments, and that business men have shown little inclination to take the initiative in confidently purchasing goods on a larger scale, or otherwise extending the field of their operations. (See also XXIV, *Manufactures.*)

Extent of the Retrogression.—With the exception of the splendid cotton crop and the enlarged foreign trade, the two bright spots in the situation, retrogression is apparent in nearly every important line of business, when compared with the two preceding years. Every year's business, under ordinary conditions, should show a normal increase over the preceding year. Instead, the cereal crops in 1911 and the output of the copper and iron and steel industries were considerably smaller than in 1910. Railway earnings decreased slightly in "gross," but considerably in the "net," and bank clearings were also smaller. Building operations were about on the same scale as in 1910. The entire year was one of severe liquidation in the stock market, and business in the financial community, as measured by stock-exchange transactions and the negotiation of commercial paper, was on a restricted scale. The number of incorporations was smaller, the volume of new securities issued less, and the investment demand for stocks and bonds poor. It was a year of high prices for commodities, of advancing wages and increasing operating costs, thus making it difficult for corporations which could not increase the price of their output or service, because of poor demand or governmental prohibition, to maintain their net earnings.

Prosperity of the South.—But while business conditions have shown a declining tendency for nearly two years, it should be stated that certain sections of the country have not felt the decline nearly as much as other sections. Thus the West enjoyed greater prosperity than the East, owing largely to the high prices

	Imports.		Exports.		Balance of Trade.*		Bank Clearings Outside New York.		Total Bank Clearings.	
	1910.	1911.	1910.	1911.	1910.	1911.	1910.	1911.	1910.	1911.
	$	$	$	$	$	$	$	$	$	$
January...	133,658,064	130,561,234	144,015,350	197,083,391	+ 10,357,286	+ 66,522,157	5,887,868,000	5,945,961,000	17,136,944,000	14,476,209,000
February..	129,886,000	121,694,740	125,517,540	175,957,305	− 4,368,460	+ 54,262,565	4,954,767,000	4,955,343,000	13,105,907,000	12,251,508,000
March....	162,955,076	139,041,928	143,700,463	161,933,204	− 19,254,613	+ 22,891,276	5,971,198,000	5,830,383,000	15,017,382,000	13,451,984,000
April....	133,942,729	119,826,706	133,089,109	158,011,250	− 853,620	+ 38,184,544	5,659,725,000	5,411,915,000	14,001,387,000	12,382,727,000
May.....	119,929,608	130,824,241	131,145,428	153,169,695	+ + 11,215,820	+ 22,345,454	5,335,942,000	5,548,078,000	13,143,912,000	13,505,702,000
June.....	119,682,945	122,537,184	127,869,263	141,706,737	+ + 8,186,318	+ 19,169,553	5,449,749,000	5,507,880,000	13,810,070,000	13,813,415,000
July.....	117,312,105	118,178,356	114,493,222	127,708,244	− 2,818,883	+ 9,529,888	5,408,248,000	5,536,589,000	13,286,915,000	13,032,405,000
August...	138,357,780	125,827,112	134,794,355	144,241,515	− 3,563,425	+ 18,414,403	5,046,135,000	5,201,858,000	11,508,403,000	12,646,000,000
September	117,271,014	125,158,108	168,358,093	195,771,502	+ 51,587,079	+ 70,613,394	5,130,652,000	5,404,792,000	11,361,667,000	12,589,769,000
October..	124,046,331	131,514,051	207,709,086	210,485,991	+ 83,662,755	+ 78,971,940	5,883,705,000	6,035,574,000	13,787,794,000	13,545,778,000
November	129,785,537	.....	206,620,377	.....	+ 76,834,840	.....	5,781,132,000	.....	13,595,426,000	.....
December.	136,709,874	.....	228,302,653	.....	+ 91,592,809	.....	5,907,350,000	.....	13,932,155,000	.....
1906.....	$1,320,501,572		$1,798,247,943		+ $477,741,862		$55,280,676,000		$159,508,640,000	
1907.....	1,434,421,425		1,880,851,078		+ 446,429,653		57,993,565,000		145,175,733,000	
1908.....	1,116,449,681		1,752,833,247		+ 636,383,566		59,996,187,000		132,272,067,000	
1909.....	1,475,612,580		1,728,203,271		+ 252,590,691		62,020,141,000		165,608,879,000	
1910.....	1,562,904,151		1,805,558,904		+ 302,654,753		66,652,310,000		163,926,823,000	

* + = balance of exports. − = balance of imports.

BUILDING CONSTRUCTION (20 CITIES)			BUSINESS FAILURES			
			Liabilities.		Number.	
	1910.	1911.	1910.	1911.	1910.	191
January	$33,443,030	$34,472,706	$17,611,648	$27,273,559	1,243	1,519
February	35,716,873	27,169,375	16,475,238	14,193,169	1,009	1,105
March	60,845,215	51,022,522	11,322,328	17,371,631	1,050	1,114
April	62,839,455	54,315,271	24,349,636	15,102,213	874	1,095
May	51,775,655	42,664,880	13,337,578	14,160,206	885	1,018
June	50,116,725	56,319,783	8,762,385	13,173,987	845	917
July	43,291,816	49,924,880	17,042,781	10,650,721	865	1,026
August	42,547,451	63,123,423	11,778,436	12,002,919	950	935
September	41,415,868	46,562,982	16,157,775	14,304,315	840	886
October	41,929,528	40,657,428	12,237,371	17,068,986	867	1,070
November	42,831,459	.....	12,757,597	13,981,987	974	1,046
December	36,457,881	.....	21,231,002	.....	1,163	.....
	$543,210,956*	$379,012,840				
		Total, 1906....	$119,201,575		10,682	
		1907....	197,395,225		11,725	
		1908....	220,787,939		15,690	
		1909....	154,603,465		12,924	
		1910....	183,063,775		11,565	

*8 months.

RAILROAD EARNINGS

	Gross.		Net.		Idle Cars. (Net Surplus.) Fortnightly Reports.		
	1910.	1911.	1910.	1911.		1910.	1911.
January	$55,828,736	$61,297,840	$13,789,543	$18,268,001	January	38,416	106,924
February	53,762,366	56,663,170	13,851,838	12,132,620		26,844	114,820
March	62,370,904	64,550,467	18,873,868	17,729,490	February	24,975	155,068
April	59,447,548	62,452,103	15,862,596	17,135,200		14,309	173,667
May	59,413,970	64,425,243	16,120,936	17,288,887	March	15,408	189,842
June	59,385,867	64,249,960	17,305,664	18,692,914		17,342	207,261
July	58,172,302	63,832,269	16,572,106	16,252,796	April	25,886	194,887
August	60,146,579	68,595,624	18,782,231	20,160,283		77,357	186,053
September	64,169,103	70,152,647	20,961,313	20,697,881		96,219	187,006
October	65,433,943	.....	22,819,166	.....	May	122,593	187,278
November	64,628,133	.....	21,615,369	.....		110,661	167,398
December	62,902,124	.....	18,213,892	.....	June	126,497	166,970
						122,915	163,170
					July	142,865	163,620
						133,301	149,072
					August	102,781	128,091
						73,679	104,170
					September	50,729	84,541
						47,076	64,283
						24,528	50,038
					October	13,316	35,897
						7,235	20,532
					November	13,581	26,514
						28,393	23,110
					December	44,014	.....
						51,413	.....

received for agricultural products. California and the other Pacific Coast states have also been favored with a good fruit and grain crop at good prices. Particular reference, however, should be made to the southern states, from North Carolina, Tennessee, Arkansas and eastern Texas to the Gulf, where the greatest business activity seems to

STOCK MARKET ACTIVITY

	Total Transactions.				Average Security Prices.			
	Shares of Stock.		Bond Sales.		10 Leading Stocks.		10 Leading Bonds.	
	1910.	1911.	1910.	1911.	1910.	1911.	1910.	1911.
January	24,538,649	10,416,526	86,822,500	91,504,000	174.8	158.0	100.3	98.6
February	16,012,626	10,194,217	64,170,500	73,739,000	173.7	159.6	99.8	98.4
March	14,988,179	6,823,868	75,773,700	65,121,000	172.7	157.6	99.8	98.2
April	14,089,639	5,369,350	51,287,500	55,466,000	169.8	156.6	98.5	98.4
May	11,918,978	11,115,578	41,919,500	91,765,000	163.9	158.0	97.9	98.6
June	16,292,870	10,508,400	48,291,000	89,595,500	159.1	161.1	97.4	98.3
July	14,254,713	5,476,559	38,099,950	60,855,500	153.8	161.0	96.8	98.2
August	10,392,788	14,994,533	31,182,000	48,031,500	155.2	155.6	96.9	98.0
September	7,673,529	17,395,957	46,030,200	62,819,000	155.7	148.9	97.9	97.7
October	13,452,381	10,936,901	56,970,000	73,202,400	160.6	149.1	98.8	97.1
November	10,713,469		41,989,000		161.0		98.2	
December	9,822,240		52,187,500		155.9		98.2	

	New Securities Listed.			Total Shares	Average Price 10 Stocks.		New Securities Listed.
	1910.	1911.			High.	Low.	
January	$143,983,200	$84,631,000	1906	284,298,010	205	163	$1,234,667,950
February	161,282,640	44,060,500	1907	196,438,824	182	119	996,845,053
March	525,821,700	148,620,250	1908	197,206,346	164	126	1,386,885,450
April	114,749,000	133,448,480	1909	214,632,194	189	154	2,424,482,585
May	174,297,300	69,266,200	1910	164,150,061	162.3		1,635,927,970
June	152,566,480	166,751,250					
July	24,565,500	57,057,000					
August	9,500,000	390,374,500					
September	71,824,000	36,583,200					
October	115,219,000	51,448,000					
November	96,828,150	80,520,100					
December	45,291,000						

exist. This section, so largely dependent on the cotton crop, received unusually high prices for the staple during the last two years, and this year was favored with probably the largest crop in its history. This will benefit the railroads of the South, and also the important southern markets. The present low price for the staple, however, will greatly decrease the amount of money which otherwise would have gone to the South; and the press is already beginning to record the unfavorable effect of the low price of cotton on Southern business conditions.

Statistics.—In the following tables a summary is presented of business conditions during the years 1910 and 1911, as shown by those indices which are generally accepted as the truest barometer of industry and trade. The tables relating to "Stock Market Activity" and including a summary of "Shares of Stock and Bonds Sold," "Average Security Prices," and "New Securities Listed," furnish an idea of the activity that prevailed in the security market, and the condition of the investment demand during the year 1911. The tables relating to "Loans and Deposits of the New York Clearing House Banks" and the "Domestic and Foreign Money Rates" will explain the conditions surrounding the

MONEY MARKET CONDITIONS.

	Loans. (000 omitted.)		New York Clearing House Banks.			
			Deposits. (000 omitted.)		Surplus Reserves. (000 omitted.)	
	1910.	1911.	1910.	1911.	1910.	1911.
January	$1,201,930	$1,242,011	$1,206,046	$1,244,825	$22,708	$28,091
February	1,225,851	1,316,300	1,241,581	1,353,262	24,819	37,045
March	1,243,014	1,340,111	1,244,390	1,380,285	12,128	33,879
April	1,231,054	1,354,864	1,217,893	1,398,961	10,001	32,896
May	1,187,506	1,337,863	1,174,365	1,392,903	19,484	43,681
June	1,195,891	1,358,025	1,191,124	1,416,472	24,654	42,079
July	1,197,177	1,392,594	1,192,569	1,432,353	29,242	17,993
August	1,229,636	1,365,437	1,261,304	1,405,641	51,298	24,964
September	1,267,163	1,354,880	1,280,182	1,385,983	28,449	24,499
October	1,255,649	1,360,815	1,230,067	1,378,366	8,981	13,759
November	1,214,067	1,361,727	1,179,746	1,374,782	12,105	10,933
December	1,228,444	1,336,231	1,193,255	1,330,404	8,069	2,470

MONEY MARKET CONDITIONS—*Continued*

	Money Rates. New York Monthly Average.				Foreign Rates. Average Bank Rates, Eng., France and Germany.		Gold Movements.	
	1910.		1911.		1910.	1911.	1910.	1911.
	4 Mos.	Call.	4 Mos.	Call.				
January	4¾	4½	4¼	3⅜	3⅞	4⅛	+ 4,031,775	+8,617,154
February	4½	2¾	4	2⅜	3½	3¾	− 125,982	+5,381,111
March	4⅜	2⅞	4	2¼	3½	3⅜	− 2,676,900	+3,613,448
April	4¾	3½	3⅝	2⅜	3⅜	3½	+34,182,707	+3,019,201
May	4¾	3¾	3⅝	2⅛	3⅜	3½	− 2,425,660	−1,802,409
June	4⅞	2¾	3⅝	2⅜	3½	3½	− 2,977,570	+1,692,959
July	5¼	2½	3⅞	2½	3½	3½	− 9,454,198	+ 416,505
August	5¾	1½	4⅛	2⅛	3½	3½	− 9,668,183	+3,143,733
September	5¾	2	4½	2¼	3⅝	3⅝	− 1,659,242	+ 2,351,235
October	5¾	3⅛	4⅝	2⅛	4⅛	4⅛	+ 3,499,929	+ 118,433
November	5⅔	3½	4	2½	4⅛	4⅛	+ 2,937,489	
December	4½	3¼	4¼	5	3⅝	4⅛	+ 3,646,232	

\+ = excess of exports. − = excess of imports.

money market during 1911; while the tables on "Bank Clearings," "Foreign Trade," "Crop Production," "Railway Gross and Net Earnings," "Idle Cars," "Pig Iron and Copper Production," "Building Construction," and "Number of Business Failures and Amount of Liabilities," will furnish a view of the year's activity in mercantile and manufacturing lines. For purposes of comparison, the data for these barometric indices are given by months for the years 1910 and 1911, and to make possible a further comparison, the totals for the several items, wherever possible, are also given for the years 1907, 1908 and 1909.*

* The author is indebted for many of the statistics presented in the foregoing tables to the monthly compilations prepared from authentic sources by Roger W. Babson, and issued periodically in "Babson's Desk Sheet of Tables on Barometric Figures for Business Conditions."

AGRICULTURE

Crop conditions during the early summer months of the year held forth every prospect of a large yield. Owing, however, to the severe drought of later months, the actual yield, as indicated by the preliminary estimates of production in the *Crop Reporter* for October, proves disappointing, and with the single important exception of cotton, to be considerably less than in the previous year, although, owing to the growth of the country, each year's crop under normal conditions should exceed that of the previous year.

Cereal Production.—The corn crop is estimated at only 2,759,300,000 bus., or 362,000,000 bus. less than the 1910 crop. Winter and spring wheat show a total of 40,000,000 bus. less than in 1910. In the case of spring wheat the yield per acre was only 9.7 bus. as compared with 11.7 bus. in 1910, and 13.5 bus. in 1909, while the yield per acre in the case of winter wheat was 14.5 bus., as compared with over 15.5 bus. in the two preceding years. The production of oats is given as only 873,641,000 bus., or 253,000,000 bus. less than in 1910, and the yield per acre only 24.8 bus., as compared with nearly 32 bus. in 1910 and 28.4 bus. in 1909. As regards wheat, oats and barley, the year's crop averaged considerably below the 1906-1910 average. In the case of hay particularly the 1911 production of 46,969,000 tons compares very badly with the 60,978,000 tons of 1909, and the 1906-1910 average of 63,507,400 tons. The yield of this crop per acre was only 1.09 tons per acre, as compared with 1.33 tons in 1910 and 1.41 tons in 1909.

Cotton Production.—In striking contrast to the poor showing of 1911 for the leading cereals stands the cotton crop which estimates place at from 14,000,000 to 15,000,000 bales, as compared with similar estimates of 11,500,000 bales for 1910. The October *Crop Reporter* placed the condition of the crop on Sept. 25 at 71.1 per cent. of normal as compared with 65.9 per cent. for the same date in 1910, 58.5 per cent. in 1909 and 66.5 per cent. for the last ten-year average.

Prices.—The effect of this showing upon prices paid to farmers has been very material. According to government figures, the prices paid to farmers in the United States on Oct. 1, compared with Oct. 1 last year, were as follows: barley averaged 45.6 per cent. higher, potatoes 30.2 per cent. higher, hay 22.7 per cent. higher, oats 17.4 per cent. higher, corn 7.5 per cent. higher, and wheat 5.7 per cent. lower. In the case of cotton, however, owing to the enormous crop, the price averages 23.3 per cent. lower. As regards the two leading cereal crops, the Chicago price for "December wheat" was quoted on Nov. 6 at 94.5 cents, compared with 88.3 a year ago and a previous November high of $1.09⅞ in 1909. For "December corn" the Chicago quotation for Nov. 6 was 62¼ cents, compared with 47¼ cents a year ago, and a previous November high of 64¼ cents in 1908. In the case of cotton, however, the situation is very different, "December cotton" being quoted in New York on Nov. 6 at 9.24 cents, compared with 14.53 cents a year ago and a previous November high of 15.66 cents in 1909.

IRON AND STEEL BUSINESS

Pig Iron Production.—The effort of railroad companies to restrict expenditures for equipment, renewals and new construction, and the general dullness of business, especially as regards equipment companies, has had a marked effect on the output of the iron and steel business, which is considered as one of the best barometric indices by which to judge the activity of the nation's trade. Beginning with Feb., 1909, the monthly production of pig iron showed a steady increase from 1,703,000 tons for that month to 2,615,000 tons in March, 1910. This month, however, marked a turning point, and during the remainder of 1910 the monthly output was on a steadily decreasing scale, until in December of that year the output of pig iron totaled only 1,777,000 tons. This scale of production has been maintained during the whole of 1911, with the exception of March and April, when the production slightly exceeded 2,000,000 tons. Comparing the rec-

ord of the first nine months for the last two years, the production of pig iron for 1911 was only 17,182,000 tons against 21,060,000 tons in 1910, or a decrease of 18.4 per cent.

The Steel Trade.—The condition of the steel business is usually judged by the statement of "unfilled tonnage" issued monthly by the United States Steel Corporation. On Oct. 31, 1911, this company reported unfilled tonnage of 3,694,328, as against 3,695,985 on Aug. 31, 1911, 3,110,919 on Jan. 31, 1911, 4,257,794 on June 30, 1910, and 5,927,031 on Dec. 31, 1909. In several instances during 1910 the unfilled tonnage figures of the United States Steel Corporation reached new low records. The detailed monthly figures show but slight variations during the year, and while higher than during the last half of 1910, show a very material decline as compared with 1909 and the first half of 1910. The feeling, however, prevails that the record for the remaining months of 1911 will show a more favorable tonnage because of the recent heavy railroad orders which do not call for shipments for several months.

COPPER PRODUCTION

As was the case during 1910, the copper market was in an unsatisfactory condition during the first nine months of 1911, although to a greater extent than in the previous year, and more successfully, efforts were made to restrict production, in view of the limited demand for the product and the large visible supply on hand. Throughout the year the price of copper was reasonably steady, ranging from 11½ to 13¼ cents per pound. As compared with the 1,162,000,000 lb. of production during the first nine months of 1910, the production of copper for the corresponding period in 1911 amounted to only 1,078,000,000 lb. In the meantime the visible supply of copper for the United States, which reached nearly 166,000,000 lb. in June, was reduced to 133,441,000 lb. in September, owing partly to the large exports of the metal. The effect of the low price of the metal upon the value of copper stocks is well illustrated by the fact that for 20 active copper stocks the average price at the beginning of November was only 30.8, as compared with 80 early in 1907, 28.6 late in 1907, and 60.8 for Aug., 1909.

FOREIGN TRADE

Exports.—The foreign trade returns for the fiscal year ending June, 1911, show that the United States for the first time exceeded the two billion dollar mark in exports. To be exact, exports totaled $2,013,549,025, as against $1,880,851,078 in the fiscal year 1907, the former high-record year. The imports amounted to only $1,527,226,105. Exports of manufactures amounted to $910,000,000, or an increase of nearly $143,000,000 over the record year of 1910, thus giving splendid testimony to the accelerated speed with which the United States has "invaded" the markets of the world. "Exports of manufactures," according to the statement of the National City Bank, "have practically doubled in value in the last ten years, and more than quadrupled in the last 20 years." The one leading article, not classified under manufactures, which showed a great increase in value in the exports of 1911 is cotton, the total being $585,000,000 as compared with $450,000,000 in 1910 and $417,000,000 in 1909. This remarkable increase, however, is due to the high price of cotton, the quantity exported in 1911 being less than that exported in 1909, although the value was larger by $168,000,000. (See also XXV, *Trade, Transportation and Communication.*)

Balance of Trade.—As explained in the 1910 AMERICAN YEAR BOOK, the imports and exports of the first eight months of 1909 showed a most unusual trend, the imports actually exceeding the exports for the first time since 1888. Beginning with September, however, a rapid change occurred in this respect, and for every month thereafter exports considerably exceeded imports, thus greatly increasing the country's balance of trade. In commenting on this place of the subject, the *Commercial and Financial Chronicle* (Oct. 21, 1911) states that "while the foreign trade figures for September constituted a record for the

period, the total inflow of merchandise for nine months of 1911 at $1,133,002,284 falls 39⅛ millions below the aggregate for the like interval of 1910, and shows a gain of only 64½ millions over 1909. The net result of our foreign trade in September was a balance of exports of $70,613,394, increasing to $322,472,005 the balance for the nine months of 1911. In Sept., 1910, the balance was $51,609,130, and for the period from Jan. 1 in that year only $50,564,349. The record nine months' export balance (that of $432,269,181 of 1908) was due, as intimated above, to the sharp drop in imports due to the then prevailing business depression."

BUILDING OPERATIONS

As regards 20 leading cities in the United States, the first nine months of 1910 showed a large decrease in building operations ($76,000,000) as compared with the corresponding period of 1909. This poor showing continued during the first five months of 1911, but beginning with June the statistics for the 20 cities show much larger operations than for the corresponding months in 1910.

The Sept., 1911, returns of the *Commercial and Financial Chronicle* for 114 cities show a total of contemplated expenditures of $75,725,768, or nearly 19 per cent. more than for the same month of 1910, nearly 16 per cent. more than in August of 1909, and 25 per cent. greater than in 1908. "For the nine months of 1911," according to the *Chronicle*, "the aggregate intended outlay for the 114 cities is a little more than for the like period of 1910 and very little smaller than in 1909, the comparison being $678,000,000, $668,000,000, and $684,500,000, respectively. Greater New York's total for the nine months this year at $153,423,201 falls behind that of last year by 5.3 per cent. and of 1909 by 26.9 per cent., but exceeds 1908 by 31.5 per cent. Outside of this city the respective aggregates are 524¼ millions, 505¾ millions, 474½ millions and 346½ millions."

MERCANTILE BUSINESS

The business conditions described under this heading in last year's YEAR BOOK, have been duplicated during 1911. Toward the close of 1910 it was the general impression that mercantile firms, owing to the low supply of goods on hand, would soon become purchasers of larger stocks. In the main, however, mercantile firms, just as the railroads, have continued a policy of acquiring stocks of goods just sufficient to meet current demands. Mercantile agencies have month after month reported quiet business and, as regards many industries, poor collections. As during the preceding year, much political unrest has prevailed during 1911, and much has been written of the disturbing effects incident to the coming presidential election of 1912. Large combinations of capital have been proceeded against by the government for alleged violation of the Sherman Anti-trust Law, and much uncertainty also seemed to prevail as to tariff revision, with the result that practically the whole of 1910 was marked by a feeling of pessimism on the part of business men, and reluctance to purchase or order stocks of goods beyond what the immediate demand would reasonably warrant. This feeling was further intensified by the fact that many expected a decline in prices and, therefore, wished to avoid any risks incident to a decline in prices subsequent to purchases.

BUSINESS FAILURES

Business failures for the year 1910 amounted to 12,109 as against 12,924 in 1909. Owing to the failure of a number of large concerns whose troubles can be traced back to the financial panic of 1907, the liabilities in 1910 amounted to over $195,000,000 as compared with less than $155,000,000 in 1909. (See XXIV, *Manufactures.*)

During the first months of 1911 the record of business failures compares favorably with that of 1910 and 1909 as regards the amount of liabilities involved, but not as regards the number of failures. In its summary for the first nine months based on the compilations of R. G. Dunn & Co., the *Commercial and Financial Chronicle* shows that the number of failures in 1911 reached

9,941, against 9,399 in 1910, but that the indebtedness involved amounted to less than $139,000,000 against nearly $154,500,000. It is further pointed out that "manufacturing debts for the nine months aggregate $61,333,505, or $9,000,000 less than for the corresponding interval of the previous year and 6¾ millions greater than in 1909. Trading liabilities, however, at $62,607,819, show an increase of $8,000,000 over last year, but the indebtedness, etc., notwithstanding the large September total, makes a very favorable comparison with recent years, the aggregate at $14,924,296 being less than that of 1910."

RAILROAD EARNINGS

Operating Costs.—The point of greatest difficulty with the railway companies of the country during 1911 has been the high cost of operation rather than a decrease in the business handled or in gross income. The idle car figures show a larger surplus on the average than during the corresponding months of 1910, but the showing in this respect is faulty because of the larger number of cars in existence. Financial journals, like the *Commercial and Financial Chronicle*, have emphasized the fact that the railroads, considered collectively, have suffered little actual falling off in gross revenues, and that "the unfavorable course of trade seems to have acted merely to prevent that further increase in their gross receipts which can be counted upon with the utmost confidence under normal circumstances." Owing to the high cost of materials and wages, however, and the refusal of the government to permit a general increase in rates, the cost of operation has been such as to lead to the conclusion, as expressed by the *Chronicle*, that "cost of operating had been mounting upward prior to 1911, but so long as substantial additions continued to be made to traffic and revenues, it did not cause a great amount of worriment. Now, however, a point has been reached where revenues no longer keep expanding, but, on the contrary, are recording some falling off. In these circumstances the fact that cost of transportation still goes on increasing makes the situation a decidedly uncomfortable one for both railroad officials and investors."

Decline in Earnings.—The *Commercial Chronicle's* elaborate compilation of gross and net earnings of railroads in the United States for the first six months of 1911 shows that gross earnings declined nearly $29,000,000, or only slightly over 2 per cent., but this comparatively small ratio must be considered in the light of the enormous increase of over $176,000,000 in gross earnings during the first half of 1910, or 15.28 per cent. Net earnings, on the contrary, owing to the inability to curtail expenses, make a decidedly different showing. The *Chronicle* figures that "the decrease of $28,958,798 in gross is attended by a shrinkage in net of $25,717,373, and that the ratio of decline in this last instance is 6.31 per cent."

Curtailment of Expenditures.—The result of this tendency toward decreasing net returns has been that the railway managements in all parts of the country have followed a policy of curtailing expenditures for repairs, renewals or extensions to the uttermost, with the further result that steel and equipment companies have been running considerably short of full capacity during the whole year.

BANK CLEARINGS

Bank clearings in 1911, when considered as a barometric index of trade conditions, show a slight decline as compared with those of 1910, although, if account is taken of the country's natural growth, the showing is not nearly so favorable. To use such clearings as an index of the volume of trade, it is important to separate the clearings of banks in New York City from those of the rest of the country. Bank clearings *outside* of New York totaled $54,292,799,000 for the first ten months of 1911, as compared with $54,727,989,000 for the corresponding months of 1910. The country's total bank clearings, including those of New York City, amounted to only $118,169,719,000 for the first ten months of 1911, as against more than $136,000,000,000 in 1910. This lower show-

ing is chiefly due to the low ebb of stock market transactions during the year.

STOCK AND BOND MARKET

Stock Transactions.—The business decline of 1911, so apparent in many lines of commercial activity, was particularly noticeable in the stock market. Total sales of stock on the New York Stock Exchange from Jan. 1 to the close of Oct., 1911, are reported in the press as aggregating only 102,754,477 shares, as compared with 144,205,000 shares in the corresponding period of 1910, 178,098,511 in 1909, and 243,511,369 in 1906. In fact, as regards volume of sales, the first ten months of 1911 are exceeded by the sales of the corresponding period for every year since 1900. During the first nine months of the year, stock-exchange transactions were uniformly on a small scale, the monthly transactions exceeding the 10,000,000 share mark only four times, while for April and July business reached the very low ebb of less than 5,500,000 shares. It was not until the closing week of September that the market witnessed an enormous liquidation in share values, brought on largely through the apprehension of government action in favor of the dissolution of the United States Steel Company and other corporations. Daily transactions a number of times reached 1,250,000 shares, and the sales of United States Steel common alone aggregated the enormous total of 2,000,000 shares in one week, with the result that September sales totaled over 17,000,000 shares.

Stock Prices.—Most of the year 1911 was marked by declining prices in stocks. Whereas the average price for ten leading and representative stocks was $182.1 in Oct., 1909, and $160.6 for the same month in 1910, the price declined to $156.6 in April of 1911. Then followed a slight rise to $161 in June and July, but the decline of September carried the price down to $148.9. The following is a brief list of market leaders, showing the high and low prices for 1910 and 1911:

RANGE OF STOCK PRICES FOR 1910 AND 1911
(*New York Stock Exchange quotations.*)

Stocks.	1910.		1911.		
	High.	Low.	High.	Low.	Nov. 6.
Amalgamated Copper	90¾	55⅛	71⅝	44¾	55⅛
American Car & Foundry	72⅞	39½	58¼	42⅜	50⅞
American Cotton Oil	69¾	52⅛	62⅜	41⅝	44
American Locomotive	62½	29	43¼	32⅛	35
American Smelting	104	61⅜	83⅞	56⅝	69¼
American Sugar	127½	111⅛	122½	112¼	118
American Tel. & Tel	143⅜	126¾	153⅛	131½	137⅛
Atlantic Coast Line	137½	102½	132½	117	128½
Baltimore & Ohio	119⅛	100¼	109¾	93½	101¼
Brooklyn Rapid Transit	82⅜	68½	84⅝	72	77¾
Canadian Pacific	202⅜	176¾	247	195⅝	241¼
Chesapeake & Ohio	92	65	86¾	6–⅜	73¾
Chicago Mil. & St. Paul	158⅜	113¾	133½	105¾	110⅝
Chicago & Northwest	182½	137½	150½	138½	115¼
Erie	34⅝	19½	38⅜	27½	33¾
Great Northern pref	143⅞	118	140	119	126¾
Illinois Central	147	124	147	132	140½
International Harvester	125⅞	83¼	129⅜	99⅛	108½
Lehigh Valley R. R.	186	173¼	181⅛	151	171¾
Missouri Pacific	73⅝	41	63	33¼	41⅞
New York Central	128	105⅛	115⅛	99⅞	107½
Northern Pacific	145¾	111½	137⅞	111	119¾
Pennsylvania Railroad	138½	122½	130⅛	118⅜	122⅜
Reading	172¼	130⅝	161⅞	134	148¾
Rock Island	57¼	22⅞	34⅜	22¾	26½
Southern Pacific	138¼	103¼	126⅜	104½	113¾
Southern Railway	33¾	18	33⅜	24¾	30⅜
Union Pacific	204¾	150¼	192⅜	153½	170
United States Steel	91	61⅛	82⅛	50	60½

Bond sales during the year 1911 were also on a restricted scale on the New York Stock Exchange, although the total from Jan. 1 to Oct. 31 was $708,541,000, as compared with only $536,116,000 during the corresponding period of 1910. The largest volume of dealings occurred in the earlier months of the year, especially January and May, when the sales exceeded $90,000,000. It should also be noted that the enlarged bond sales of September and October resulted in great measure from the large increase in the dealings in the United States Steel and American Tobacco bonds, which materialized as a result of the government's action against these two combinations. The price of ten leading and representative bonds showed a decline from 102.6 in Feb., 1909, to 96.8 in July of 1910, and then rose to 98.8 in Oct., 1910. This average price, with very slight variations, prevailed during the first nine months of 1911, and it was not until October that the price level sank to 97.1.

New Securities Listed.—In the volume of new securities listed on the New York Stock Exchange, the year 1911 also shows a large decrease as compared with the two preceding years. At the time of this writing such figures have been compiled for only the first nine months of the year, and show a total of only $1,030,792,380 or nearly $248,000,000 less than during the corresponding months of 1910. Compared with 1909 the listings of new securities is very small, because in that year the total reached the unusual figure of $2,424,482,585. August is the only month of 1911 which shows large listings, the total aggregating over $390,000,000. With the exception of June and August no month shows listings of securities in excess of $150,000,000, while in the case of February, May, July and September, the total fell to the unusually low figures of 44 million, 69 million, 57 million and 36½ million, respectively. During October and November the financial press emphasized the practical cessation of new corporate financing, although it is believed that many corporations are awaiting a favorable opportunity for the floating of new stocks and bonds.

INCORPORATIONS

The capitalization of corporations formed in the United States during 1911 has shown some falling off, if judged by the monthly statistics furnished by the *Journal of Commerce* for the incorporation of companies in the eastern states with an authorized capital of $1,000,000 or more. During the first ten months of each of the last three years, the *Journal of Commerce* statistics of incorporations are the following, and show a decrease of $150,000,000 during the first ten months of 1911 as against the same period in 1910:

	1911.	1910.	1909.
January	$356,719,000	$187,180,000	$80,550,000
February	172,400,000	169,468,000	76,250,000
March	139,910,000	362,659,000	50,250,000
April	61,690,000	254,085,000	100,348,900
May	163,595,000	139,980,000	195,773,100
June	159,550,000	231,319,000	212,575,000
July	193,350,000	112,020,000	106,496,000
August	87,350,000	107,500,000	88,500,000
September	77,004,000	58,100,000	225,925,000
October	124,220,000	93,695,000	145,500,000
Total	$1,565,886,000	$1,716,007,000	$1,292,168,000

MONEY MARKET

The condition of the money market has been one of ease during the entire year, and thus far has not been materially affected by the demands for credit incident to the moving of the crops. In its issue for Sept. 30, 1911, the *Commercial and Financial*

Chronicle summarizes the situation well by stating that: "The severe liquidation in stocks, the depressed state of trade and the practical cessation of new issues of securities have brought about great dullness in the money market at a time when agricultural demands and the quarterly settlements usually mean activity and more or less stringency. This year rates have not advanced the slightest fraction, either for call or time loans, nor have commercial discounts moved up in the final week of the month. . . . The time money market has been so stagnant that quotations are somewhat nominal." The article then proceeds to explain that ninety-day maturities are being secured for 3¾ per cent., and that longer dates can be secured at 4 per cent. By way of explanation of the cause, the *Chronicle* states that "one reason for the slightly easier tone is the diminution in mercantile requirements. The offerings of commercial bills are so meager as to excite general comment. The best firms are doing only a quiet business and are able to finance operations with their own capital; consequently, few prime names are in the market. The competition for bills on the part of banks and trust companies has tended to lower rates; though the range is still given as 4½@5 per cent., scarcely any first-class name need now pay the higher figure. . . . The absence of profitable employment for funds at home has led our bankers to make loans in large volume to Berlin, Paris, and, to some extent, to London. This illustrates how far we are from normal international monetary conditions just at the moment."

A review of the tables on "Money Market Conditions" will show that the New York monthly average money rates for four-months loans but slightly exceeded 4 per cent. previous to September, and for September and October averaged only 4½ to 4⅝ per cent. as compared with 5⅜ per cent. in 1909. The call-loan rate in New York has been nearly constant during the entire year, the prevailing rate being 2¼ per cent. as compared with 3½ to 5 per cent. for the last three months of 1909.

PRICES AND COST OF LIVING

The Advance in Prices.—In the 1910 AMERICAN YEAR BOOK it was explained that one of the most unfavorable factors in the business situation of 1910 was the high price level at which nearly all commodities were selling, and that Bradstreet's index number for Jan., 1910, reached the highest mark yet attained. Thomas Gibson, likewise, in the same issue of the Year Book (pages 390-393) showed, that despite periodic checks, "the price of food, clothing, minerals and other necessities has risen from 91.6 in 1890 to 112.8 on Oct. 1, 1910; and from the low point established in 1897 (72.5) to the high point of 1910 (120.6) there was an advance of no less than 66 per cent." The reasons for this advance in prices are many, and the many writers on the subject are greatly at variance with one another as to the relative importance of the several factors considered responsible. Mr. Gibson presented his view of the causes, and for a detailed summary of this phase of the subject, the reader is referred to Roger W. Babson's article on "Factors Affecting Commodity Prices," published in the *Annals of the American Academy of Political and Social Science* for Sept., 1911.

Index Numbers.—Although the Bradstreet's monthly index price at no time during 1911 averaged as high as the price level of 1910, viz.: 8.98, nevertheless the year may be regarded as one of unusually high prices the world over; in fact, so high that much of the unrest both here and abroad is traceable to this source. Beginning with January, Bradstreet's index number decreased month by month from 8.8361 to 8.4586 in May. Beginning with June, however, the index number shows a gradual increase until in October it stood at 8.8065, or nearly equal to that of 1910, and only slightly exceeded by the showing of 1907. Similarly, the London *Economist* index number for English prices shows a steady increase during nearly all of the first nine months, the index number for September being 2593 as compared with 2523 for January, 2373 for 1910, 2499 for 1906, and 2125 for 1900.

INDEX NUMBERS

	Bradstreet's.	English Prices.		Year.	Gibson's Index Numbers.					
		Sauerbeckt's.	London *Economist.*		All foods.	Clothing.	Minerals.	Other.	All other than foods.	Total.
1900	7.88	75	2,125	1890....	43.4	17.3	15.5	15.4	48.3	91.6
1901	7.57	70	1,948	1895....	42.0	15.3	11.0	13.2	39.5	81.5
1902	7.88	69	2,003	1900....	44.2	16.3	14.8	16.1	47.2	91.4
1903	7.94	69	2,197	1905....	47.3	18.0	16.0	17.1	51.0	98.3
1904	7.92	70	2,136	1906....	49.8	19.2	16.6	19.6	55.4	105.2
1905	8.10	72	2,342	1907....	50.9	20.8	18.9	19.3	59.0	109.9
1906	8.42	77	2,499	1908....	54.2	17.6	15.4	18.3	51.3	105.5
1907	8.90	80	2,310	1909....	59.2	17.3	15.2	20.2	52.7	111.9
1908	8.01	73	2,197	1910....	59.3	18.9	15.4	21.6	55.9	115.2
1909	8.51	74	2,390	1911Jan.	54.3	19.5	15.2	19.9	54.6	108.9
1910	8.98		2,373	Feb.	52.9	19.1	15.1	20.1	54.3	107.3
1911Jan..	8.8361		2,523	Mar	53.3	18.9	15.1	20.2	54.2	107.5
Feb..	8.7662		2,536	Apr.	53.1	18.8	14.9	19.4	53.1	106.2
Mar..	8.6929	78.9	2,536	May	53.5	19.1	14.8	19.2	53.1	106.5
Apr..	8.5223	80	2,554	June	52.9	19.0	14.8	19.1	52.9	105.8
May..	8.4586	80.3	2,540	July	57.5	18.4	14.8	19.3	52.5	110.0
June..	8.5294	80.0	2,517	Aug.	60.1	17.5	14.8	19.1	51.4	111.5
July..	8.5935	78.9	2,492	Sept	61.2	17.1	14.7	19.7	51.5	112.9
Aug..	8.6568	79.5	2,531							
Sept..	8.8191	80.3	2,593							
Oct..	8.8065		2,576							
Nov..	8.8936		2,597							

Effects of High Prices.—These high prices have been largely responsible for the poor condition of the investment market during the year. They have also exerted a powerful influence on the net returns of our large corporations, because they have been responsible during the last few years for the demand on the part of the wage-earning classes for a higher wage return. The effect of the higher price level upon the wage-earning classes is apparent when we examine "Gibson's Index Numbers" by commodities. The index number for "commodities other than foods" stood at 51.5 in Sept., 1911, as compared with 55.9 for the year 1910 and 47.2 in 1900; while in the case of minerals the index for Sept., 1911, was 14.7, as compared with 15.4 in 1910 and 14.8 in 1900. In these two groups of commodities, therefore, there has been a decline in the average price during the year, and only a slight increase since 1900. In the case of clothing likewise the increase in prices has not been extraordinary, the index numbers for Sept., 1911, and the years 1910 and 1900 being, respectively, 17.1, 18.9 and 16.3, although in 1907 the index rose to 20.8. When we consider the price of "all foods," however, the showing is entirely different. For Sept., 1911, the Gibson index number stood at 61.2, as compared with 52.9 last July and 54.3 in January. The index number for this group of commodities in 1910 averaged 59.3, in 1907 only 50.9, and in 1900, 44.2.

ANTI-OPTION BILLS

The year 1910 witnessed the enactment of laws similar to those described on page 385 of the 1910 American Year Book in Wyoming, Kentucky, South Carolina, New Jersey, Virginia, Louisiana, Rhode Island, and Mississippi. The most important bill under consideration in 1910 and 1911 was the Scott bill, the real object of which was not so much to regulate but to destroy the future contract in cotton. The bill, while in committee, was fought by the New York and New Orleans Cotton Exchanges. If passed, the law would have had far-reaching effects, because, as outlined by the *Commercial and Financial Chronicle:*

The obvious effects of the Scott bill in the event of its becoming a law would be a small matter, compared with the financial consequences that would result from the passage of such a measure. The Exchange operations in cotton bills would be practically destroyed, as the banks would hesitate to buy drafts, the value of the collateral for which could not be determined or fixed in advance. International exchange would thus be affected in a manner detrimental to the financial interests of this country, disturbing the delicately adjusted system by means of which trade balances are adjusted at the smallest possible loss. . . . . Another possibility would be that the supremacy of the cotton market which America through the agencies of the New Orleans and New York Cotton Exchanges has long dominated, may be transferred to Liverpool. With foreign powers fixing the prices at which cotton for future delivery would sell, the importance of cotton as a factor in the trade balance would diminish, while the financial burden of carrying the crop on this side of the water would be placed upon the banks of this country.

Despite the objections to the bill, it passed the House of Representatives in June, 1910, but the Senate took no action on it during that session of Congress. On Feb. 17, 1911, however, it was reported in modified form to the Senate by the Senate Committee on Interstate Commerce. After that several efforts were made to attach the bill to the agricultural appropriation bill, but without success, until finally a call by Senator Clark for a consideration of the bill was defeated. The bill has received, throughout its career, the ardent support of southern representatives and senators, and notice has already been served that a bill, similar to the Scott measure, will be introduced in the present session of Congress.

NEW BANK STATEMENT OF THE NEW YORK CLEARING HOUSE

In June, 1911, arrangements were made whereby the trust companies for the first time in their history clear directly through the New York Clearing House Association. The event was characterized by the press as an epoch-making one in the banking annals of the city. Sixteen trust companies became members of the association within about one month of the adoption of the resolution providing for their admission. To be admitted the trust companies "are obliged to have a capital of $1,000,000, to maintain a 25 per cent. reserve—15 per cent. cash and 10 per cent. on deposit with a member bank having a 25 per cent. cash reserve—and to furnish weekly reports of average condition for the week and of the actual condition at the close of business each Friday."

In view of the importance attaching to the New York "Weekly Bank Statement," it is important to note that the inclusion of the trust companies in the statement greatly increased the several items of the statement, and that, for purposes of comparison with former statements, the new statement greatly obscures the movements of the different items, and thus vitiates one of the real purposes for having such a statement. Moreover, all the trust companies have by no means joined the Association, and, as they join, their items will again increase the total items of the statement. For purposes of easy comparison with former statements a number of leading journals have advised changing the form of the statement in such a manner as to keep the results for the banks entirely separate from those of the trust company members of the Clearing House Association. "These weekly returns," as the *Commercial and Financial Chronicle* explains, "are used not merely to compare one week with another, but to compare one year with another. This being so, inclusion of the trust companies in the general totals renders comparison altogether out of the question." (See XIV, *Banking*.)

STOCK AND PRODUCE EXCHANGE RULINGS

New York Stock Exchange.—1. On April 12 the following resolution was adopted relating to the rate of commissions charged where orders for se-

curities dealt in on the Exchange are executed outside of the United States and accepted by a member for the account of a non-member:

Resolved, Whenever a non-member of this Exchange shall cause to be executed in any market outside of the United States any order or orders for the purchase or sale of securities listed on this exchange, other than government, state or municipal securities, and said purchase or sale shall be accepted by a member or a firm who are members of this Exchange for the account of said non-member, ⅛ of 1 per cent. commission shall be charged said non-member in addition to any commission charged by the party or parties making the transaction.

2. In Dec., 1910, the question of arbitrage business in securities as between the New York and leading European exchanges was referred for consideration to a special committee of the New York Exchange. As a result of its conclusions the Exchange adopted another resolution, designed to prohibit arbitrage dealings on joint accounts between members of the New York Stock Exchange and non-members on both domestic and foreign business. This resolution supplements the one just mentioned and goes into operation on July 1. It reads as follows:

Whereas, the so-called arbitrage business by means of joint account trading between this Exchange and foreign cities, where each party interested charges a commission or allowance, has resulted in practically nullifying the commission law; therefore,

Resolved, That any business, domestic or foreign, for the joint account of a member of the Exchange and a non-member, where each party in interest charges a commission or allowance, is hereby prohibited;

Resolved, That any business, domestic or foreign, conducted under an arrangement of accounts, not joint account in name but designed to produce results similar to those of the above-described joint account, is hereby prohibited.

3. The regulations governing bids and offerings on the New York Stock Exchange, adopted on March 30, 1910, and explained in last year's issue of the YEAR BOOK, were supplemented in April, 1911, by additional rules. These new rules determine the practice that must be observed in cases where bids or offerings exceed the unit of 100 shares (see 1910 AMERICAN YEAR BOOK, p. 387), and the added portion is as follows: "A member may sell or offer the largest amount bid for without regard to priority of bids. Should the offer be of an amount larger than the largest bid, the balance shall go to the next largest bidder in sequence; bids for equal amounts being on a par. A member may buy on bids under the same rule." Silent bids and offers are not recognized, and further provision is made that "disputes arising from a question as to priority of bid or offer, if not settled by agreement between the members interested, shall be settled by vote of the members knowing of the transaction in question. Disputes as to the application of the rules relating to the transaction in question, if not settled by agreement between the members interested, shall be settled by any member of the Committee of Arrangement." Lastly, it is provided that all the rules pertaining to bids and offers for blocks of securities in excess of 100 shares "shall not apply to lots of less than 100 shares, nor to active openings when bids and offers are simultaneous."

4. The rule of the New York Stock Exchange permitting securities listed upon the Exchange, which bear stamps showing that the tax thereon under the law recently enacted relative to the taxation of "secured debts," has been paid, to be dealt in as tax-exempt securities. This rule was passed in recognition of the new law in the state of New York which provides for "the registration of the bonds and the payment thereon of a registry tax of one-half of one per cent., after which such bonds are to be completely exempt thenceforward from the annual local tax on personal property."

Chicago Board of Trade.—An amendment to the rules of the Chicago Board of Trade was adopted on June 16 by a vote of 348 to 191, the object of which is to prevent "corners" and manipulation, and which for this purpose provides that, in case of failure to deliver on a future

contract, the commercial value of the commodity on the day of maturity of the contract for purposes of settlement shall be made by a committee, and that the added penalty for defaulting shall be limited to a definite percentage of the value of the commodity involved. The following is a copy of the amendment:

> In case any property contracted for future delivery is not delivered at maturity of contract, the President shall appoint a committee of three from the membership at large, to be approved by the Board of Directors, which committee shall determine as nearly as possible the true commercial value of the commodity in question on the date of maturity of the contract, and the price so established shall be the basis upon which settlement is made.
>
> As liquidated damage, the seller shall pay to the purchaser not less than five per cent., nor more than ten per cent. of the value of the commodity as established by the committee; the percentage, within said limits, to be such as in the judgment of the committee, may be just and equitable.
>
> Settlement shall be made without delay, and the damage, as determined under the provisions of this section, shall be due and payable immediately upon the finding of the committee.
>
> This section shall not be construed as applying to any parties, having the property both bought and sold, in all of which cases settlement shall be made on the basis of prices established by the contracts in such instances.

New York Cotton Exchange.—The New York Cotton Exchange again took under consideration the revision of its rules with a view to meeting the criticisms contained in the 1908 report of the Commissioner of Corporations. At a special meeting of the Exchange it was resolved to request the Board of Managers of the Exchange to formulate amendments to the by-laws which would call for: "1. More frequent revisions of the differences between the various grades above and below middling; (2) Prevent delivery of cotton on warehouse receipts unaccompanied by a certificate of grades, except during the last few days of the month; (3) The adoption of the standard of grades as promulgated by the government; (4) Forbid the classification or delivery on contracts of a stable length of less than 11/16 of an inch."* No. 2 of the aforementioned amendments was adopted in April; but No. 1, calling for the more frequent revision of differences between the various grades above and below middling and considered to be the most important, was defeated. The adoption of the government's standards of grades came up for discussion in April, but no final action was taken at that time.

On Dec. 4, however, the Exchange changed its method of fixing the differences between grades. In view of the criticisms directed against the Exchange by the U. S. Commissioner of Corporations, the sentiment in favor of a change has been steadily gaining, resulting finally in a conference on Oct. 23 last, between representatives of the New York and New Orleans Exchanges and various American cotton manufacturers' associations. The "commercial difference" system was proposed by the representative of the American Cotton Manufacturers' Association, with the recommendation, however, that if this did not prove feasible to any exchange, that then there should be at least two revisions between Oct. 15 and May 1 of each season in addition to the September revision. Through its Board of Managers the New York Exchange promptly chose the alternative of having three revisions annually and prepared an amendment to the by-laws providing for an additional revision in February. This amendment was adopted by an overwhelming majority. Henceforth, beginning Feb. 5, 1913, there will be three revisions, viz: in February, September and November.

COTTON BILLS OF LADING

Safeguarding Through a Central Bureau.—Many conferences were held during the year among the banking and cotton interests to devise a method of safeguarding cotton bills of lading, and in this way prevent a recurrence of failures like the Knight-Yancey and the Steele-Miller failures

* As summarized by the *Commercial and Financial Chronicle.*

of 1910. In August the Liverpool Cotton Bill of Lading Conference Committee, representing the Liverpool Cotton Association and the banking interests of Europe, submitted a carefully considered plan whereby a central bureau was to be established in New York for the purpose of verifying the genuineness of all through bills of lading. This central bureau was opened in New York on Sept. 1, and was subsequently approved by the Committee on Bills of Lading of the American Bankers Association, which reported that the Bureau should at least be accorded a fair trial.

Opposition to the Plan.—Although the Bureau is now in operation, opposition has by no means ceased. While some important cotton-carrying railroads have consented to sign the agreement prepared by the Liverpool Committee, it is reported that the leading exchange buyers of New York have refused to recognize the Bureau or agree to the plan. The chief opposition directed against the plan, however, came from the New Orleans Cotton Exchange, the New Orleans Clearing House Association, and the Galveston Cotton Exchange. Many objections were advanced by these Associations, but the strongest objection of all, as reported by the *Financial Chronicle*, "and one that American banking interests are asked carefully to consider, is that in which it is urged that the plan, if adopted, may place upon American bankers buying foreign exchange certain responsibilities which cannot now be defined, arising from a possible lack of diligence in having bills of lading promptly verified, and which, in acceptance of bills, against a forged bill of lading, might lead to litigation and contention. Some contend that the plan submitted by the foreign interests is in reality a guaranty scheme which conservative banking interests of this country frowned upon when the question was first broached in this shape." According to reports on Sept. 23, 1911, Southern banking and cotton interests, assembled in a conference at New Orleans called by the New Orleans Cotton Exchange, "have indicated their intention to oppose the plan not only by refusing to comply with its requirements, but by organizing among their several constituencies a militant resistance to the proposed reflection upon the honor of the southern cotton merchants and upon the rights of the southern cotton trade." (See also XIV, *Banking*, and XXV, *Trade, Transportation, and Communication.*)

GOVERNMENT CONTROL OF COMBINATIONS

Dissolution of Trusts.—By far the most important event of 1911 affecting the large corporate interests of the country, unless it proves to be the refusal of the Interstate Commerce Commission to permit the railroads to apply a general increase in freight rates, has been the series of court decisions compelling (or relating to) the dissolution of the Standard Oil and American Tobacco Companies. Not only are these two large concerns vitally affected, but other corporations, like the International Harvester Company, have, in view of these decisions, proposed plans of reorganization for the approval of the Attorney-General of the United States, and only recently the government brought suit for the dissolution of the United States Steel Corporation, the largest of all the combinations of capital. The decisions referred to have been anxiously awaited by the business community, as affording a definite interpretation of the hitherto indefinite Sherman Anti-trust Law. Much of the uncertainty in the business conditions of the past two years has been attributed to these cases and the managers of our so-called trusts have hoped that these epoch-making decisions would define the limits to which capital can combine, and the legal basis on which their business can be operated. (See also IV, *American History;* and VII, *Law and Jurisprudence.*)

The Standard Oil Decision.—On May 15, 1911, the United States Supreme Court rendered the first of the two so-called trust cases. It upheld the decree of the Circuit Court of

Appeals providing for the dissolution of the Standard Oil Company of New Jersey, on the grounds that it is a combination in restraint of trade in violation of the Sherman Act, and, also, that its methods show it to be a monopoly in restraint of trade in violation of the same act. The decision, which was read by Chief Justice White, and concurred in by all the other judges, except Justice Harlan, who disagreed with that portion of the decision relating to the construction of law, makes a distinction between "reasonable" and "unreasonable" restraint, and holds that the Sherman Anti-Trust Act should be so construed as to restrict its application to such acts as constitute an "undue" restraint of trade. The company was given six months' time to discontinue business, and was expressly forbidden to maintain its control over the production and transportation of petroleum and its products in interstate business, or over the subsidiary companies, by any trusteeship or other device.

The shares of the subsidiary companies will be distributed on a *pro rata* basis to the stockholders of the Standard Oil Co. of record Sept. 1, 1911. It is reported that there will be 35 separate companies. This will involve, according to reports, the distribution of 220,000 certificates representing 33 subsidiaries, on the basis of about 6,000 certificates of the parent company. All the separate companies will have separate officers and boards of directors, and will operate their business as independent lines. According to the Babson "Stock Records," it is believed that the possible results will be: "Competition will be more pronounced; markets for petroleum and by-products will be erratic; independent companies will apparently compete where formerly it was restraint of trade; and the conduct of Standard Oil will be more expensive."

The American Tobacco Decision.—The final decision in the case of the American Tobacco Co. was rendered by the United States Supreme Court on May 29, 1911, and, as in the preceding case, the company was held to have violated the first two sections of the Sherman Act. Dissolution was ordered, and the company was given eight months' time in which to effect it, permission being given to the company, however, to work out a plan of reorganization, under the immediate supervision of the Circuit Court of the Second New York District, whereby there may be created "out of the elements now comprising it a new condition which shall be honestly in harmony with and not repugnant to the law." The main conclusions in the decision are the following:*

1. That the combination in and of itself as well as each and all of the elements composing it, whether corporate or individual, whether considered collectively or separately, be decreed to be in restraint of trade and an attempt to monopolize and a monopolization within the first and second sections of the Anti-Trust Act.

2. That the court below, in order to give effective force to our decree in this regard, be directed to hear the parties, by evidence or otherwise, as it may be deemed proper, for the purpose of ascertaining and determining upon some plan or method of dissolving the combination and of recreating out of the elements now composing it a new condition which shall be honestly in harmony with and not repugnant to the law.

3. That for the accomplishment of these purposes, taking into view the difficulty of the situation, a period of six months is allowed from the receipt of our mandate, with leave, however, in the event, in the judgment of the court below, the necessities of the situation require, to extend such period to a further time not to exceed sixty days.

4. That, in the event before the expiration of the period thus fixed a condition of disintegration in harmony with the law is not brought about, either as the consequences of the action of the court in determining an issue on the subject or in accepting a plan agreed upon, it shall be the duty of the court, either by way of an injunction restraining the movement of the products of the combination in the channels of interstate or foreign commerce, or by the appointment of a receiver, to give effect to the requirements of the statute.

In accordance with the permission granted, the company submitted a plan of reorganization which was vigorously opposed by independent

* See Babson's "Daily Stock Records."

interests and to which Attorney-General Wickersham, although concurring in the main, offered certain objections. The independent interests objected chiefly on the ground that the control of the new companies would, under the plan proposed, remain with the majority of voting stockholders of the American Tobacco Co., and contended, as stated in the petition to the court, that:

> Any plan of reorganization should be such as to make all of those companies that were once independent really independent again. Unless this is done, and effectual safeguards provided to create and permanently maintain such real separation and independence, conditions may be made much worse in the future than they have been in the past for a really independent organization, and it may be impossible to continue in business for any considerable period of time.
>
> Your petitioners cannot see how they or any other independent manufacturer of, or dealer in tobacco, can be in any way protected while one great corporation holds and controls $170,000,000 of assets, or why the American Tobacco Co. should not dispose of its legitimate holdings, pay off its obligations according to their priorities, and divide among its stockholders what is left.

The United States Circuit Court, however, on Nov. 8th, did not uphold the contentions of those who protested against the plan, and with certain modifications approved the plan. As summarized by the *Journal of Commerce*, the chief points made by the Court are as follows:

> That the 29 individual defendants shall not increase their holdings of stock during the next three years.
>
> That the Court will not prohibit the fourteen new companies when organized from adopting methods of business open to their many competitors.
>
> That none of the fourteen corporations shall during a period of five years acquire any stock in any of the other corporations or purchase or acquire their property or business.
>
> That none of these corporations shall make any loans, or otherwise extend credit to any of the other corporations.
>
> The Court disapproves Attorney-General Wickersham's proposition that the matter of the disintegration be kept open for five years.
>
> Business will be so divided that no company will have substantially over 40 per cent. in volume or value of any particular line.
>
> As to the United Cigars Stores Co., it is held that the Court has no power to seize its property.

There still remains the possibility of an appeal of this approval of the reorganization plan to the United States Supreme Court. This question, however, as stated on the bulletin card of the Babson System "will rest with the Attorney-General, as the government is the only party to the suit aside from the defendants, who are not expected to object to the minor changes specified by the court."

U. S. Steel Corporation Suit.—The last important action taken by the Government, in its efforts to enforce the Sherman act against large combinations, is the suit for the dissolution of the United States Steel Corporation, filed in the Circuit Court at Trenton, N. J., on Oct. 26, 1911. Many prominent individuals, connected with the formation of the company, and a large number of corporations are named as defendants. The suit was long expected, especially in view of the Congressional investigation of the corporation, and an exhaustive investigation by the Bureau of Corporations. The company and its subsidiaries, it is charged in the petition, are maintaining or attempting to maintain a monopoly in the steel business. That the interests in the corporation were well aware of the government's action is generally believed, especially in view of the corporation's decision to cancel the Hill ore lease and reduce freight rates on iron ore on certain controlled lines with a view, it is believed, to rid itself of those objectionable features, which might be construed as a violation of the anti-trust act.

It may also be stated here that the United States Supreme Court has sustained the validity of the federal corporation tax which was attached to and passed with the tariff law of 1909, and which is really a corporation income tax. (See XIV, *Public Finance.*)

XIV. PUBLIC FINANCE, BANKING, AND INSURANCE

PUBLIC FINANCE

HENRY B. GARDNER

FEDERAL FINANCE

Receipts and Expenditures.—The following tables show results for the fiscal year ending June 30, 1911, in comparison with those for the year 1910. The impression conveyed by the table is without doubt somewhat too favorable to the year 1911; in the case of receipts, because the larger yield of the corporation tax is due to greater promptness in payment rather than to an increase in the yield of the tax; in the case of expenditures because the figures are the preliminary figures and include no allowance for the postal deficit. Notwithstanding these facts, it is clear that the results in 1911 were distinctly more favorable than those of 1910. It is probably safe to say that the ordinary receipts would have covered both ordinary expenditures and expenditures for the Panama Canal, even if there had been no bond issue. This outcome is the more noteworthy in view of the falling off of $20,000,000 in the customs revenue.*

ORDINARY RECEIPTS

(In millions of dollars)

	1910.	1911.
Customs	334	314
Internal revenue:		
Ordinary	269	289
Corporation tax	21	34
Miscellaneous	52	64
Total	676	701

*Since writing the above the final figures for the year ending June 30, 1911, have been obtained and incorporated in the tables. For the first time since 1883 the Post Office shows a surplus. The amount, however, is only $219,118.12.

ORDINARY EXPENDITURES

(In millions of dollars)

	1910.	1911.
Civil and miscellaneous	172	174
War	156	160
Navy	123	120
Indians	19	21
Pensions	161	158
Postal deficiency	8	...
Interest on public debt	21	21
Less repayments of Unexpended Balances		656 2
Total	660	654
Surplus of Ordinary Receipts over Ordinary Expenditures	16	47

PANAMA CANAL

(In millions of dollars)

	1910.	1911.
Receipts (sale of bonds)	....	18
Expenditures	34	37
Excess of Expenditures over Receipts	34	19
Surplus or Deficit, including Panama Canal	—18	+28
Balance in General Fund at close of year	107	140

Appropriations for 1912.—In the YEAR BOOK for 1910, attention was called to the fact that for the first time in a number of years, the appropriation voted by Congress for the fiscal year 1911 (for purposes other than the Post Office, which is practically self-sustaining, for the Panama Canal, and the permanent

appropriations, which are independent of the annual appropriation bills) showed a decrease as compared with the preceding year, the amount of the decrease being about $20,000,000. This experience was repeated in the appropriations for the fiscal year 1912 which, calculated on the same basis, amount to $589,814,624, about $5,000,000 less than the appropriations for 1911.

The Tariff.—While little was accomplished during 1911 in the way of tariff legislation a considerable portion of the time of the House during the regular session, and practically the whole time of both House and Senate during the special session, was taken up by the discussion of this question. (For history of tariff legislation, see IV, *Reciprocity* and *The Tariff.*)

The proposed reciprocity agreement with Canada (see also V, *International Relations*) granted concessions to Canada by placing on the free list agricultural products, fish, timber, sawed lumber, wood pulp, paper and paper board worth not over four cents a pound, the concession in regard to wood pulp, paper and paper board being subject to the condition that no restrictions be placed on the exportation of these articles, or of the wood from which they are made. A considerable reduction was also made in the duties levied by the United States on aluminium, laths, shingles, planed lumber and iron ore. The most important concessions to the United States were the placing on the free list of cottonseed oil, tin plate, and steel wire, and moderate reductions of the Canadian rates on a variety of manufactured products, including meats (fresh, salted and canned), lard, canned vegetables, flour, meal, malt, confectionery, cutlery, watches, clocks, automobiles, agricultural machinery, and on cement and bituminous coal.

Of the dutiable imports into the United States from Canada during the year 1910, 76.4 per cent. would have been admitted free under the agreement, and the duty could have been reduced on 14.44 per cent., while of the dutiable imports into Canada from the United States 16.51 per cent. would have been admitted free, and the duty reduced on 19.45 per cent. The United States would have remitted $4,849,933 of the $5,649,826 duties collected on Canadian products, and Canada would have remitted $2,560,579 of the $7,776,236 collected on American products.

The rates contained in the agreement were embodied in a bill, introduced in the House, providing that they should be applicable to Canadian products when the President should make proclamation that rates not in excess of those contained in the bill are applied by Canada to the products of the United States. An exception was made in the case of wood pulp, paper and paper board, which, subject to the condition noted above, were placed on the free list when imported from Canada, regardless of the acceptance by that country of the rates provided for in the bill. This bill became law at the special session of Congress, but owing to the failure of Canada to take action, its provisions, with the exception of those dealing with wood pulp, paper and paper board, remain inoperative. The reciprocity feature being lacking, the question now arises whether other nations enjoying the most favored nation clause may not claim the same privilege for their wood pulp, paper and paper board that is granted to Canada.

Bills were also passed at the special session of Congress placing on the free list agricultural implements, cotton bagging, cotton ties, leather, boots, shoes, fence wire, meats, prepared cereals, flour, biscuit, timber, lumber, shingles, laths, sewing machines and salt, and making extensive reductions in the duties on wool and woolens, manufactures of cotton, iron and steel products, and chemicals. The bill dealing with wool and woolens placed an *ad valorem* duty of 29 per cent. on wool, and duties, estimated to average 49 per cent. on manufactures of wool, as compared with duties amounting to 44.31 per cent. and 90.1 per cent. on wool and its manufactures, respectively, collected, under the existing law, in 1910. On manufactures of cotton the proposed reduction was from the equivalent of 48.12 per cent., collected

under the existing law in 1910, to the equivalent of 27.06 per cent.

All these bills were, however, vetoed by the President, who urged that no attempt should be made to revise the tariff until the tariff board should report in December.

The Tariff Board.—A bill providing for the establishment of a permanent Tariff Board of five members (not more than three to be of the same political party), to be appointed by the President and to report to the President and to Congress, when directed, was passed by the House at the regular session, and, in a somewhat amended form, by the Senate. The bill as passed by the Senate did not come to a vote in the House. There was appropriated, however, $225,000 to continue the work of the existing Tariff Board, so-called, until June 30, 1912, and the President added to the Board two members (making five in all) of Democratic affiliations, thus making it correspond as closely as possible to the Board provided for in the proposed legislation. The Board has already presented a report on the pulp and news print paper industry (Schedule M), and was directed by the President to report on Schedule K (wool and woolens) and Schedule I (cotton manufactures) by Dec. 1, 1911. Its work has apparently been organized in a comprehensive and thoroughgoing manner, the President stating in his veto of the wool bill that the working force numbered 80, which number has been increased since that date. A committee of the Tariff Commission Association, composed of leading business men, which investigated the work of the Board, reported that the Board "is composed of able, impartial, and earnest men; . . . that the staff . . . includes a number of exceptionally competent technical experts; . . . that the work of the Board is . . . highly organized, well systematized, and running smoothly; and that Congress and the people can now await the completion of that work with entire confidence."

The Corporation Tax.—By a unanimous decision March 13, 1911, the Supreme Court upheld the constitutionality of the corporation tax, declaring it to be an excise tax inasmuch as it is levied not on the franchise or property of the corporation, but is rather "a tax upon the doing of business with the advantages which inhere in the peculiarities of corporate or joint-stock organization of the character described," the net income, from whatever source derived, being taken as the measure of the tax. It is this fact, that the present tax is levied upon the doing of business, which distinguishes it from the income tax levied by the act of 1894. (See VII, *Law and Jurisprudence.*)

Two years' experience with the tax shows that its probable annual yield is between $25,000,000 and $30,000,000. While the amount of the tax collected during the fiscal year ending June 30, 1910, was about $21,000,000, later collections brought it up to over $27,000,000. In the fiscal year ending June 30, 1911, the collections were nearly $33,000,000, but over $6,000,000 represented collection of taxes assessed during the previous fiscal year. Deducting this sum, and adding the taxes collected since the close of the fiscal year, we find that the tax collected on the 1911 assessment is slightly over $28,000,000. The net income of the corporations making returns and the taxes paid to June 30, 1910, are shown in the following table; the figures are in millions of dollars:

Nature of Business Done.	Net Income.	Tax.
Financial and commercial	395	2.7
Public service	809	6.3
Industrial and manufacturing	1,326	9.1
Mercantile	360	1.7
Miscellaneous	236	1.1
Total	3,125	21.0

The Income Tax Amendment.—In addition to the nine states named in the YEAR BOOK for 1910, as having ratified the income tax amendment to the Federal Constitution, 21 states have ratified it in 1911, making in all 30 states that have taken favorable action. The number required for the adoption of the amendment

is 36. The states which ratified the amendment in 1911 are:

Arkansas	Maine	North Carolina
California	Michigan	North Dakota
Colorado	Missouri	Ohio
Idaho	Montana	Oregon
Indiana	Nebraska	Tennessee
Iowa	New York	Washington
Kansas	Nevada	Wisconsin

The Public Debt.—In response to the repeated requests of the Secretary of the Treasury, Congress passed a law (act of March 3, 1911) authorizing the issue of 3 per cent. Panama Canal bonds which should not be available as a basis for the issue of circulating notes. On May 16 the Secretary of the Treasury offered to the public, at not less than par, $50,000,000 of these bonds in denominations of $100, $500 and $1,000, payable in 50 years. It was announced that bids would be received until June 17, and that in making allotments "of two or more bidders offering the same price, those asking for the smaller amount of bonds will receive priority in allotment." As this was the first issue in nearly half a century of government bonds without the circulating privilege, much interest attached to it. In view of the prevailing prices of the securities of European countries, and the fact that there had been some question as to the possibility of the United States placing at par a 3 per cent. loan without the circulation privilege, the outcome must be regarded as distinctly satisfactory. There were over 10,000 bids, aggregating more than three times the amount of the loan. Allotments were made to 1,190 bidders; $2,330,500 was taken at a price of 103 or over, and the lowest price received was 102.24, the average being 102.5764. Aside from the issue of these bonds and the issue of a small amount of 2½ per cent. bonds ($41,900 on Sept. 30, 1911), also without the circulation privilege, to the depositors under the Postal Savings law, there has been no change in the interest-bearing public debt, which stood at $963,344,390 on Sept. 30, 1911, as compared with $913,317,490, Sept. 30, 1910. The figures for the gross debt (exclusive of gold and silver certificates, for which an equal amount of coin and bullion is held in the treasury) less net cash in the treasury, at the corresponding dates, were $1,060,618,665, and $1,053,198,137. (See also XIV, *Banking.*)

Financial Administration.—In his annual report, Dec., 1910, the Secretary of the Treasury described the relation of the Treasury Department with the business community as artificial, unbusiness-like and burdensome. He called attention to the fact that, while the letter of the law requires that customs and internal-revenue duties be paid in actual money, it has for some time been the practice in New York to accept, in payment of customs duties, cashiers' checks drawn against deposits of actual money, made each day in the Sub-Treasury, to cover the amount of such checks, on the theory that money deposited in the Sub-Treasury is actually paid, and that he had extended the same privilege to all Sub-Treasury cities. He urged further that the law be so amended as to permit the use of certified checks on national banks in payment of both customs and internal-revenue duties.

He also repeated his recommendations made to previous Congresses that the issue of gold certificates against foreign gold coin and bullion be authorized, and that the sinking-fund law, which requires the purchase each year of 1 per cent. of the debt, a law which has been lived up to only when the Treasury had sufficient funds for the purpose, be amended so as to make it conform with the actual facts of the government's finances. In connection with the recommendation in regard to gold certificates, he pointed out that during the last 20 years there has been imported $374,000,000 of foreign coin, of which $310,000,000 has been recoined by our mints at an expense of $800,000, while, during the same period, $766,000,000 of United States gold coin has been exported; and that while we have $940,000,000 of gold coin stored in the government's vaults, only a fraction of which probably will ever be called for, we coin yearly about $100,000,000 of gold at an expense of between $200,000 and $300,000.

The recommendations of the Secretary in regard to certified checks and gold certificates were acted on by Congress. An act passed Feb. 25, 1911, authorizes the acceptance of certified checks of national banks, state banks, and trust companies, in payment of customs and internal revenue duties, but no one offering such checks is to be released from his obligation until the checks are paid, and if a check is not paid it is to constitute a prior lien on the assets of the bank on which it is drawn. Two days later an act was passed authorizing the issue of gold certificates against foreign coin and bullion deposited in amounts of not less than $1,000, the amount of such issues not to exceed one-third of the gold certificates outstanding.

Economy and Efficiency.—Both the President and the Secretary of the Treasury in their reports submitted at the opening of Congress in Dec., 1910, laid great stress on the necessity of securing greater economy and efficiency in the administration of the government and the efforts being made in that direction. An appropriation having been made for a continuance of the work noted in the YEAR BOOK for 1910, the President has created the Commission on Economy and Efficiency which is investigating the organization and accounting systems of the departments and has already presented a number of reports on special topics. A commission has also been appointed to consider the revision of rates on second-class mail, a revision urged by the Postmaster-General with a view to overcoming the deficit in the department.

Customs Frauds.—The investigation and prosecution of customs frauds has continued, the extent of the frauds proving to be much greater than was at first supposed, and the Secretary of the Treasury reports a distinct improvement in the honesty and efficiency of the customs administration, but again insists on the absolute necessity of the complete removal of the system from political influences. The amount of duties recovered on account of fraudulent weighing was $3,400,000 at the time the Secretary made his report. In Oct., 1911, the Circuit Court of Appeals confirmed the conviction of the Secretary of the American Sugar Refining Company.

STATE AND LOCAL FINANCE

Two-thirds of the states held legislative sessions in 1911 and the legislation in regard to taxation has been exceptionally important. The states most deserving of attention are perhaps New York, Wisconsin, California, Minnesota and Ohio.

New York.—Legislation in this state altered radically the existing system of taxation. The inheritance tax law of 1910 (see YEAR BOOK, 1910), which had called forth severe criticism on the part both of public officials and the business community, on the ground that it was driving capital out of the state, was remodeled with a view to securing lower rates, and doing away with the drag-net taxation of non-residents. The first two classes under the act of 1910 (Class 1, father, mother, wife and minor children; Class 2, husband, adult children, including adopted children, brother, sister, wife or widow of a son, husband of a daughter, and lineal descendants) are combined, granted an exemption of $5,000, as compared with $5,000 for Class 1 and $500 for Class 2 under the act of 1910, and taxed at the rate of 1 per cent. on the excess over $5,000 up to $50,000, 2 per cent. on the excess over $50,000 up to $250,000, 3 per cent. on the excess over $250,000 up to $1,000,000, and 4 per cent. on the excess over $1,000,000. The exemption for other beneficiaries, Class 3 of the act of 1910, is fixed at $1,000, as compared with $100 under the act of 1910, and the corresponding rates of taxation are 5 per cent., 6 per cent., 7 per cent. and 8 per cent. Under the act of 1910 the rates for Classes 1 and 2 ranged from 1 per cent. to 5 per cent., the rate for Class 3 being five times as high. Equally important with the change in rates is the exemption of stock in New York corporations, and money and securities in New York, when owned by non-residents. There can be no doubt of

the favorable effect of these changes in inducing non-residents to invest in the securities of New York corporations.

Next in importance to the inheritance tax legislation is the legislation dealing with the taxation of "secured debts," including mortgages on real estate situated outside the state, bonds, notes, and debentures, secured by such mortgages, and the bonds of other states and their municipalities. The law provides for a single (not annual) tax of ½ per cent. on the face value of such securities, on payment of which the security becomes exempt from taxation whether for state or local purposes. If the tax is not paid, the property not only remains subject to local taxation, but the privilege of offsetting debts against it is withdrawn. Under the recording tax law of 1906, mortgages on real estate situated in New York were treated in the same manner. The privilege was also extended to bonds secured by such mortgages, in case the corporation issuing the bond chose to pay the tax. The corporation, however, not having sufficient motive to make the payment this portion of the law remained practically a dead letter. By an amendment passed in 1910, but overlooked in the YEAR BOOK for last year, the individual bondholder was permitted to pay the tax and secure exemption for his bonds. As a result of these laws, therefore, mortgages on property wherever situated and the bonds secured by such mortgages on payment of a tax of ½ per cent. become exempt from the general property tax. The law taxing transfers of stock has been amended so as to exclude mere loans of stock, or the return thereof.

Radical changes have also been made in the methods of assessing real estate. The tax is now to be assessed against the property, the name of the owner being no longer essential to the validity of the assessment, as heretofore. Not only will this change diminish the number of assessments declared void on account of error in the name of the owner, but, by substituting a system of grouping real estate by location rather than ownership, it will make possible a more exact valuation. A change in the law which requires that in cities distinction shall be made in the assessment between land and improvements will contribute to the same result.

Other amendments to the tax law provide a more definite and equitable basis for the equalization of local assessments by county supervisors, and confer upon the state board of tax commissioners the power to equalize assessments under the so-called Ford franchise-tax law, a power which has hitherto been confined to the courts, acting on the initiative of the corporation assessed, a practice involving much litigation and delay. In New York City the date of assessment has been changed from the second Monday of January to the first day of October, and taxes are made payable semi-annually instead of annually. By diminishing the necessity of borrowing in anticipation of taxes, it is expected that the change to semi-annual payment will save the city several millions of dollars a year. A constitutional amendment was rejected by the people in Nov., 1911, granting to cities the right of "excess condemnation," i. e., the right to condemn more land than is actually needed for a public improvement, with a view to giving the city control of the layout of abutting property, and a share in the increase in land values resulting from the improvement.

For the first time in several years the state has been compelled to levy a general property tax, as a result of the increasing interest and sinking fund charges growing out of the issue of over $150,000,000 of canal and road improvement bonds. The rate of the tax is six-tenths of a mill.

Wisconsin.—Wisconsin has introduced a new element into its tax system by the imposition of a tax upon incomes, which is intended ultimately to take the place of the tax on personal property. Partnerships, associations, and corporations organized for profit, as well as individuals, are subject to the tax, which in the case of residents is levied upon all incomes from whatever source derived, except that in

the case of incomes derived from business carried on partly within and partly without the state, the former only is taxed, and, in the case of non-residents, is levied upon income from sources situated within the state. The law permits the usual deductions for expenses of business enterprises and professional pursuits met out of income, but, in the case of salaries, makes the deduction conditional on the return of the names of the persons to whom such salaries are paid. The same rule applies to interest paid by an individual. Dividends and income received from a corporation or firm subject to the tax may also be deducted on condition that the corporation or firm paying such dividends or income makes a similar return. In the case of interest on the bonds of corporations, so much of the interest as is represented by the ratio between the property located, and the business transacted, within the state to the total property and business of the corporation is subject to taxation, and is assessable to the bondholder, but, if not paid by him, is to be a lien upon the corporation, and, when paid by it, may be deducted from the interest payable to the bondholder, unless otherwise provided for by contract. Inheritances which have paid the inheritance tax are exempt, as is money received from life insurance up to $10,000.

In the case of individuals there is an exemption of $800, increased in the case of husband and wife to $1,200, with $200 additional for each child, under 18 years of age, and other person who is entirely dependent upon the taxpayer, and for whose support he is legally liable. On the first $1,000 of taxable income the rate is 1 per cent. On each additional $1,000 of taxable income the rate increases by ¼ per cent. until it reaches 2 per cent. on incomes of $5,000. It then increases by ½ per cent. on each additional $1,000 until it reaches 5½ per cent. on the 12th thousand. On all taxable income in excess of $12,000 it is 6 per cent. In estimating such exemptions, however, the income of husband, wife and children under 18 years of age is to be taken as a unit.

In the case of corporations the rate depends upon the relation between the taxable income and the assessed value of the property employed in the acquisition of the income. If the taxable income is 1 per cent., or less, of the value of the property, the rate is ½ per cent., and increases by ½ per cent. for each increase of 1 per cent. that the income constitutes of the value of the property, until the maximum rate of 6 per cent. is reached in the case of those corporations whose income is 12 per cent. or over of the value of their property.

The state is to be divided into assessment districts by the state tax commission, which is to appoint an assessor of incomes for each district who is to hold office for three years and be subject to transfer at the pleasure of the commission. The assessment of corporations, however, is to be made by the commission itself. All individuals judged by the assessors of income to be subject to the tax are required to make returns on a form prescribed by the state tax commission. Both the state tax commission and the assessors of income have authority to assess according to their judgment the income of persons who fail to make a return. In each county there is to be a county board of review, consisting of three residents of the county, appointed by the state tax commission, which board has the right, after hearing testimony, to raise or lower the assessment as fixed by the district assessor. From the county board appeal lies to the state tax commission. False returns or failure to make a return are punishable by fine or imprisonment, and income not returned but found by the assessors is subject to double taxation.

In making return of their income, taxpayers must distinguish income derived from sources within and without the state and, in the case of income from within the state, must designate the political divisions from which it is derived. While, for the purpose of determining exemptions and abatements, the income of each individual is to be treated as a unit, it is to be segregated for purposes

of tax payment, each city and village collecting a proportion of the total tax equal to the proportion of the total sources of income situated within its limits, the residence of the owner being treated as the *situs* of sources of income situated without the state. Of the taxes so collected, the local body retains 70 per cent., turning over 20 per cent. to the county and 10 per cent. to the state. As the state bears the whole expense of assessment and collection it is evident that it acts practically as the administrative agent of the local bodies, itself deriving little financial advantage from the tax.

The full significance of the new law in connection with the reform of the existing system of local taxation is revealed in the provisions (of this, and another act exempting the bonds of the local subdivisions of the state) which exempt the great bulk of personal property from taxation in the future, the transition from the old system to the new being provided for by making receipts for taxes paid on personal property receivable in payment of the income tax. There is no question that this law is the most significant experiment in the field of state and local taxation which has been made for a generation, the outcome of which will be watched with great interest in other states. In view of the adoption of the income tax as an important element in its own system, it is noteworthy that Wisconsin is among the states which have ratified the income-tax amendment to the federal constitution.

Wisconsin has also moved in the direction of uniform public accounting by giving to the state board of control (created by the last legislature and consisting of the governor, secretary of state, chairmen of the House and Senate finance committees, and three additional members appointed by the Governor with the approval of the Senate) supervision of the finances of all departments and institutions handling state funds, with power to prescribe a uniform system of accounts, and by conferring on the state tax commission similar power, as regards uniform accounting, over counties, cities, towns and villages. The power of the state tax commission has been extended in another direction by putting into its hands the administration of the inheritance-tax law with authority to appoint an expert agent for that purpose. The administrative features of the inheritance-tax law itself have also been strengthened.

California.—The changes in California are the result of the work of the special commission which has been in existence since 1906 and has presented several reports, the latest in the latter part of 1910. The changes recommended by the commission involved the adoption of constitutional amendments. The first amendment exempts mortgages from taxation. The purpose of the second amendment is to provide a separation between the sources of state and local revenue. The more important of its provisions may be summarized as follows:

(*a*) Railroads, including street railways, car companies of all sorts operating upon railroads, express, telegraph, telephone, gas and electric companies, are to pay to the state a tax on gross receipts from all business done entirely within the state, and upon a percentage of their gross receipts from business crossing the boundaries of the state, equal to the percentage which their mileage within the state constitutes of their total mileage. The rates are, for railroad companies, including street railways, gas and electric companies, 4 per cent., car companies 3 per cent., express companies 2 per cent., telegraph and telephone companies 3½ per cent.

(*b*) Insurance companies are to pay to the state a tax of 1½ per cent. on gross premiums received in the state. Deductions are allowed for return premiums and reinsurance, and for county and municipal taxes on real estate owned by such companies.

(*c*) Banks are to pay a tax of 1 per cent. on the value of their shares, such value to be determined by adding to the amount paid in on the shares the accumulated surplus and undivided profits, and deducting the value of real estate assessed for

county and municipal purposes. Unincorporated banks and bankers, and branches or representatives in California of banks situated outside the state, are to pay a similar tax.

(*d*) All franchises not included in the above provisions are to be taxed at the rate of 1 per cent. of their value.

While these rates are fixed in the amendment, they are subject to change by the legislature if two-thirds of all the members elected vote in favor of such change. Property taxed for state purposes (in the case of class *a*, all property used exclusively in the business of the corporation taxed) is exempted from local taxation, with the exception that companies included in group *a* are not to be released from payments agreed to, or required by law, as compensation for any special privilege or franchise granted by municipal authority, and that all property in groups *a*, *b* and *d* shall be subject to local taxation to pay the interest and principal of bonded indebtedness existing prior to the adoption of the amendment, the taxes paid for this purpose, however, to be deducted from the taxes paid to the state.

If the revenue provided by the above taxes is insufficient to meet state expenditures, additional taxes may be levied by the state on all property, including the property specially subject to state taxation. In the case of counties suffering a loss of revenue, by the exemption of property from local taxation, the state may provide for their reimbursement out of its own revenue.

While this legislation removes from the taxing power of the local bodies a large quantity of property (estimated at $340,000,000) it adds approximately $850,000,000 to the property subject to state taxation, and thereby enables the state to dispense with the general property tax, the whole of which may be devoted to local purposes exclusively.

A third constitutional amendment authorizes the issue by the state of $18,000,000 of 4½ per cent. bonds, the proceeds to be used for the construction of a system of state highways.

The inheritance-tax law has also been amended by increasing the exemptions for widows and minor children from $10,000 to $24,000, and for husband and adult children from $4,000 to $10,000, and increasing the rate of tax, for all classes of beneficiaries, on the excess over $25,000. The "primary" rates (i. e., the rates applicable on inheritances up to $25,000 less the exemption allowed) range from 1 per cent. for husband, wife, lineal issue, lineal ancestors, and adopted children, to 5 per cent. for distant relatives and strangers, with rates of 2 per cent., 3 per cent. and 4 per cent. for intermediate classes. On the excess over $25,000, the rates are as follows, the statements in parenthesis referring to the law as it stood before amendment: On the excess over $25,000 up to $50,000, two (one and one-half) times the primary rates; on the excess over $50,000 up to $100,000, three (two) times the primary rates; on the excess over $100,000 up to $500,000 four (two and one-half) times the primary rates; and on the excess over $500,000, five (three) times the primary rates, California thus imposes the same rate of tax, 25 per cent., on the excess over $500,000, passing to distant relatives and strangers, that New York imposed under the act of 1910 on the excess over $1,000,000. The administrative provisions of the law have also been strengthened.

Minnesota.—The Minnesota inheritance tax has hitherto been uniform, so far as the degree of relationship of the beneficiaries was concerned, the rates ranging from 1½ per cent. on the excess over $10,000 up to $50,000, to 5 per cent. on the excess over $100,000. A law was passed in 1911 which distinguishes between five classes of beneficiaries: (1) wife, and lineal issue; (2) husband, lineal ancestors, and adopted children; (3) brother, sister (and their descendants), wife or widow of a son, and husband of a daughter; (4) uncle, aunt and their descendants; (5) all others. The so-called "primary rates" are 1 per cent. for Class 1, 1½ per cent. for Class 2; 3 per cent. for Class 3; 4 per cent. for Class 4, and 5 per cent. for Class 5. These rates are paid by the bene-

ficiary on amounts in excess of the exemption which he enjoys, up to $15,000. On the excess over $15,000 up to $30,000, the rates are one and one-half times the primary rates; on the excess over $30,000 up to $50,000, twice the primary rates; on the excess over $50,000 up to $100,000, two and one-half times the primary rates; and on the excess over $100,000, three times the primary rates. The exemptions are $10,000 for a widow, husband, lineal descendants and adopted children, $3,000 for lineal ancestors, $1,000 for those in Class 3, $250 for those in Class 4, and $100 for those in Class 5.

Minnesota has also exempted from the general property tax, and subjected to an annual tax of three mills on the dollar, money and credits, defined as including all forms of currency in common use, bank deposits, other valuable things, annuities or other sums receivable at stated periods, and demands secured by unrecorded deed or mortgage, the privilege of offsetting debts against such property being withdrawn. The bonds of the state and its minor divisions have been exempted from taxation.

Ohio.—While the legislation of all the states so far reviewed indicates a tendency toward the modification of the general property tax, Ohio by its legislation in 1911 has endeavored to strengthen the administration of the tax by limiting the tax rate, thereby forcing a more complete assessment. It has also endeavored to place a definite limit on the expenditures of the local bodies. The so-called 1 per cent. tax law provides that the aggregate amount of taxes (for local, county and state purposes) levied in any taxing district in 1911 shall not exceed that levied in 1910; that in 1912, 1913, 1914 and succeeding years, the amount levied shall not exceed the 1910 levy by more than 6 per cent., 9 per cent., and 12 per cent., respectively. Furthermore, the rate of taxation for purposes other than interest and sinking fund charges on debt incurred by vote of the people subsequent to the passage of the act, shall in no district exceed 1 per cent. of the assessed value, unless a higher rate is authorized by vote of the people, and in no case shall it exceed 1½ per cent. Additional maxima are established for the rates that may be levied for the purposes of the different divisions of local government, three mills for counties, two mills for townships, and five mills for cities, villages and school districts. In the case of townships and municipal corporations, indebtedness is limited to 2½ per cent. of the assessed value, with power to increase the amount to 5 per cent. by vote of the people. To carry out the provisions of the act, there has been established in each county a "budget commission" composed of the auditor, prosecuting attorney, and the mayor of the largest city in the county, to which commission the taxing authorities within the county are required to submit estimates and reports, and which has the power to compel compliance with the law. As a part of the same plan to secure a full valuation of property the power of the state tax commission, which has already brought about a large increase in the assessment of corporations, has been increased with reference to both corporation and local assessment.

Oregon.—An amendment, promoted by the advocates of the single tax and submitted through the initiative, has been adopted, the effect of which is a matter of considerable uncertainty. It abolishes the poll tax; provides that no bill regulating taxation and exemption throughout the state shall become a law until approved by the people at a regular general election; removes all constitutional restrictions on taxation by the provision that no such restrictions shall apply to measures approved by the people, determining what shall be subject to or exempt from taxation or the method of taxation; grants local option to the "people of the several counties," authorizing them "to regulate taxation and exemptions within their several counties, subject to any law which may be hereafter enacted." As there is no machinery in existence by which the people of the counties can exercise the powers thus conferred on them, and as it is not clear whether the limitation, in

the provision quoted above, applies to the procedure by which the people of the counties may take action, or to the limitations which may be placed by the legislature on their right to determine what shall be taxed and what exempt, further legislation seems to be required as a condition of making any real progress in tax reform.

Other States.—Iowa, like Minnesota, has adopted the plan of a low rate of taxation, five mills on the dollar, on money and credits. It stills permits the offset of debts against such property. The "tax ferret" law has also been repealed. Michigan has adopted a mortgage recording tax of ½ per cent., similar to that in New York, and has increased the power of the state tax commission by giving it authority, on its own initiative, to review local assessments, and order reassessments. Maine has exempted mortgages secured by real estate situated in the state, has increased the debt limit of cities of over 40,000 inhabitants (Portland) from 5 per cent. to 7½ per cent., and has slightly amended its inheritance tax law with a view to avoiding double taxation. Massachusetts has also slightly modified its inheritance tax law, with the same purpose in view, and has taken a first step, through the extension of the functions of the auditor, toward the development of a unified state budget. The legislature has submitted to the people constitutional amendments providing for excess condemnation similar to the New York amendment, and to permit the separate treatment of forest lands for purposes of taxation. The first of these has been adopted. New Hampshire has exempted from taxation mortgages bearing not over 5 per cent. interest, and secured by property situated in the state, and has established a permanent tax commission. Colorado and North Dakota have also established such commissions, and North Carolina has increased the power of its corporation commission, which performs the function of a state tax commission, giving it authority to appoint county assessors with a right of supervision over local assessors. Pennsylvania has provided that the tax on school-district bonds, like county and municipal bonds, shall be deducted by the issuing authority, and that the bonds shall be exempt in the hands of the holder. In cities of the second class (Pittsburgh and Scranton), the classification of land as city, suburban, and agricultural, with different rates of taxation for the different classes, is abolished, and machinery situated in these cities has been exempted from taxation. The legislature has submitted a constitutional amendment, which has been adopted by popular vote, excluding from the debt limit of Philadelphia bonds for subways, docks, and wharves which yield a revenue sufficient to meet the interest and sinking-fund charges. Wyoming has exempted mortgages from taxation.

Special Tax Commissions.—Special tax commissions have reported in Delaware, Wisconsin, Pennsylvania, Illinois, and Rhode Island. The Pennsylvania and Delaware commissions have been continued. Commissions were appointed in 1911 in Michigan, Utah, Connecticut and Iowa. The most valuable of the reports submitted in 1911 are perhaps those of Illinois and Rhode Island. The former recommends constitutional amendments authorizing the classification of personal property, and the application of different rates to the different classes, the creation of a state tax commission, and the assessment of local property by county assessors. The Rhode Island commission recommends the state taxation of the "corporate excess" (the value of the securities outstanding less the value of the real estate and personal property taxed locally) at the rate of three mills on the dollar, the assessment of interstate corporations to be determined by the unit rule, the exemption in the hands of the holder of securities of corporations taxed by the state, a tax at the same rate on other intangible personalty, the reduction of the state tax on general property, and the appointment of a permanent state tax commission.

General Tendencies.—While legislation in each state has been largely controlled by conditions, historical

and immediate, which are peculiar to itself, a study of the legislation and of the views of tax commissions described above seems to disclose at least two tendencies which may be termed general: (1) a movement toward the break-up of the general property tax; (2) the creation of a more effective administrative system in matters of taxation, brought about through centralized control of local assessment. Ohio stands alone as an exception to the first of these tendencies.

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BANKING AND CURRENCY

FRED ROGERS FAIRCHILD

THE YEAR'S GROWTH OF BANKING INSTITUTIONS

National Banking System.—The national banking system has had a normal growth during the year. There were in active operation on Oct. 31, 1911, 7,331 national banks, an increase of 113 since Oct. 31, 1910. The total number of new banks organized during this period was 214, made up of 59 conversions of state banks, 75 reorganizations, and 80 primary organizations. On the other hand, 101 banks went out of existence, 3 by failure and 98 by voluntary liquidation, leaving the net increase 113, as stated.

The changes in the number of banks in operation in different sections of the country is shown in the following table:

Section.	Oct. 31, 1910.	Oct. 31, 1911.	Change.
New England....	472	466	— 6
Eastern States...	1,622	1,641	+19
Southern States..	1,467	1,469	+ 2
Middle States....	2,040	2,044	+ 4
Western States...	1,173	1,245	+72
Pacific States....	439	462	+23
Island Possessions	5	4	— 1
Total U. S.....	7,218	7,331	+113

The circulating notes of the national banks amounted to $739,165,313 on Nov. 1, 1911, as compared with $724,874,308 on Nov. 1, 1910, and $727,705,981 on Jan. 3, 1911. This is an increase of $14,291,005, or 2 per cent. since Nov. 1, 1910, and an increase of $11,459,332 during the first 10 months of 1911.

The development of the principal items of resources and liabilities of the national banks is shown in the following table, taken from reports made to the Comptroller of the Currency:

	Sept. 1, 1910.	Sept. 1, 1911.	Change.	Per cent.
Number of banks reporting.....	7,173	7,301	128	1.8
Loans and discounts.....	$5,467,160,637.98	$5,663,411,073.21	+ $196,250,435.23	3.6
U. S. bonds.....	740,592,100.00	766,218,220.00	+ 25,626,120.00	3.5
Specie and legal tender notes.....	851,685,037.13	895,475,406.81	+ 43,790,369.68	5.1
Capital stock and surplus.....	1,651,003,493.22	1,695,482,951.60	+ 44,479,458.38	2.7
Individual deposits.....	5,145,658,367.65	5,489,995,011.98	+ 344,336,644.33	6.7
U. S. government deposits.....	50,160,500.63	48,343,740.95	— 1,816,759.68	3.6
Total resources.....	$9,826,181,452.36	$10,379,439,383.89	+ $553,257,931.53	5.6

State Banks.—A statement compiled by the Comptroller of the Currency shows the following statistics of state banks in the United States on June 7:

Number of banks reporting..	12,843
Loans and discounts.....	$2,439,414,667.62
Cash on hand.....	236,662,497.38
Capital stock and surplus....	623,511,621.86
Individual deposits.....	2,777,566,835.81
Total resources.....	$3,747,786,296.35

Private Banks and Loan and Trust Companies.—The principal statistics of private banks and loan and trust companies on June 7 are shown in the following figures, from the state-

ment compiled by the Comptroller of the Currency:

	Private Banks.	Loan and Trust Companies.
Number of banks reporting	1,116	1,251
Loans and discounts	$128,045,872.21	$2,249,421,081.30
Bonds, securities, etc	9,869,645.22	1,114,778,687.06
Cash on hand	7,189,327.84	269,825,566.23
Capital stock and surplus	29,202,390.72	786,189,001.43
Individual deposits	142,277,224.21	3,295,855,895.27
Total resources	$182,824,220.68	$4,665,110,868.71

Savings Banks.—The following statistics of the savings banks of the United States on June 7 are from a statement compiled by the Comptroller of the Currency:

	Mutual Savings Banks.	Stock Savings Banks.
Number of banks reporting	635	1,249
Loans and discounts	$1,809,680,214.95	$605,591,964.03
Bonds, securities, etc	1,715,516,716.41	133,752,180.46
Cash on hand	15,791,646.85	26,616,689.93
Capital stock paid in	.....	72,177,899.09
Surplus fund	233,602,108.93	28,231,974.53
Individual deposits	3,460,575,072.17	752,008,526.36
Total resources	$3,762,401,625.61	$889,911,677.01

The geographical distribution of savings banks with the number of depositors and amount of deposits is shown in the following table, also of date of June 7:

	Number of Banks.	Number of Depositors.	Amount of Deposits.	Average to each Depositor.
New England States	421	3,394,877	$1,372,883,365.55	$404.39
Eastern States	242	3,921,792	1,981,013,057.39	505.13
Southern States	197	367,784	93,014,689.71	252.91
Middle States	816	1,064,776	358,699,656.60	336.88
Western States	54	61,140	13,078,285.84	213.90
Pacific States	154	786,816	393,894,543.44	500.62
Total U. S.	1,884	9,597,185	$4,212,583,598.53	$438.93

Banking Power of the United States.—If we bring together all the banking institutions of the United States, it appears that on June 7 the Comptroller of the Currency had reports of 24,371 banks of all kinds. These banks held loans and discounts amounting to $13,046,389,844.90; bonds, securities, etc., valued at $5,051,856,404.29; and cash on hand amounting to $1,554,147,169.28. Their capital stock and surplus were together equal to $3,464,494,945.50; individual deposits amounted to $15,906,274,710.27; and the total resources of the banks reporting were $23,631,083,382.67.

BANK EXAMINATION

National Banks.—The Comptroller of the Currency, Lawrence O. Murray, has continued his vigorous efforts to

raise the standard of the national banks by stricter and more efficient examination, and to check the unnecessary growth of the national banking system. The investigation of all applications for charters has been made more searching. The Comptroller has announced that in all cases where the department is in doubt as to the propriety of approving an application, the bank examiner located in the district will be directed to proceed to the place and make a personal investigation. The expenses of such investigation are placed upon the applicants. Heretofore the department has depended on such information as could be obtained by correspondence, a method which has proved very unsatisfactory.

Along the same line, the movement to check the establishment of national banks through the work of professional bank promoters, which was inaugurated in 1910, has been vigorously pushed during 1911. The Comptroller announced in May that in future no consideration would be given to any application for a charter unless accompanied by a statement that no payment would be made for soliciting stock subscriptions or for any other sevices of promoters.

In other ways the system of national bank examination has been strengthened. Banks have been required to adopt proper by-laws and live up to them, where this had not been done in the past. They have been requested to hold directors' meetings at least once a month. Special attention has been given to banks guilty of delay in remitting collection items to other banks, an evil which had led to considerable complaint from bankers.

State Banks.—The efforts of the Comptroller to bring about more coöperation between national and state examiners and between his office and the various state banking departments have been continued. Joint meetings of state and national examiners have been held, and various plans for coöperation have been introduced.

Reports from many states show that the same movement for stricter regulation and examination of banking is going on in the several state banking departments. The State Superintendent of Ohio, announced in October that no professionally promoted bank would hereafter be able to obtain a state charter. The Banking Department of New York will also hereafter inquire carefully into any activities of professional promoters before granting a charter for a new bank.

Clearing House Examination.—Mr. Murray has strongly urged that the clearing houses of the reserve cities undertake the examination of their own member banks. This movement, which was already in operation in several cities, has made great progress during the year. In July, 1911, the Comptroller announced that the plan of clearing-house examinations had been adopted by the three central reserve cities, New York, Chicago and St. Louis, and by eleven of the reserve cities, as follows: Kansas City, Minneapolis, St. Paul, St. Joseph, Los Angeles, San Francisco, Milwaukee, Philadelphia, Oklahoma City, Nashville, and Cleveland. By Sept. 1, the cities of Washington, Cincinnati, Louisville, and Portland, Ore., had adopted the system, and it was being considered by practically all the other reserve cities, and by some which were not reserve cities.

CURRENCY REFORM

The currency-reform movement during the year has centered about the work of the National Monetary Commission and particularly about the plan for monetary legislation proposed by Senator Aldrich.

The Aldrich Reserve Association Plan.—In January, Senator Aldrich, Chairman of the Commission, submitted to the Commission the outline of a plan for a national "reserve association." Though carefully avoiding the term "central bank," the plan was actually that of a central bank of limited powers. The main features of the plan were as follows: That a central banking institution, to be known as the Reserve Association of America, be chartered by the United States.

Capital and Ownership.—The capital shall be approximately $300,000,-

000 and shall be owned wholly by the national banks. Each national bank may subscribe to an amount of the capital stock of the Reserve Association equal to 20 per cent. of its own capital.

Organization and Directors.—The country shall be divided into 15 districts, in each of which will be located a branch of the Reserve Association. In each district the subscribing banks shall be grouped in several local associations, the territory included in the district being divided so that every national bank will be located within the boundaries of some local association.

There is to be a board of directors for each local association, for each branch, and for the Reserve Association. The boards are to be chosen by a complicated method, according to which (1) part of the directors are chosen by the banks or their representatives, all the banks having equal voting power, regardless of their size; (2) a part of the directors are chosen by the banks or their representatives by ballots in which each bank has as many votes as the number of shares which it owns in the Reserve Association; (3) in the case of the boards of the branches and of the Reserve Association, the directors chosen by the banks shall then choose additional directors, not officers of banks, who shall "fairly represent the industrial, commercial, agricultural, and other interests" of the district or the country, as the case may be. The board of the Reserve Association shall contain as *ex officio* members the governor of the Reserve Association, the two deputy governors, the Secretary of the Treasury, the Secretary of Commerce and Labor, and the Comptroller of the Currency.

Executive Officers.—The executive officers of the Reserve Association shall be a governor, two deputy governors, a secretary, and such subordinate officers as may be necessary. The governor and deputy governors shall be appointed by the President of the United States from a list submitted by the board of directors.

Functions of the Reserve Association.—(1) The Reserve Association shall be the fiscal agent of the United States government, receiving all public moneys and disbursing the same, except that when necessary public moneys may be deposited in national banks in places where there is no branch of the Reserve Association.

(2) The Reserve Association may receive deposits only from the government of the United States and the stock-holding national banks, and its domestic banking business shall be confined to dealings with the government and the stock-holding banks.

(3) It may rediscount commercial paper for any bank having a deposit with it, under certain restrictions. It may also, under certain conditions, discount the direct obligation of a depositing bank, or purchase of depositing banks acceptances of banks or responsible business houses.

(4) The Reserve Association shall have other powers, such as to deal in United States government obligations, gold coin and bullion, foreign exchange, to open branches and do business in foreign countries, etc.

Note Issue.—There is to be no further issue of notes by national banks, though they may maintain their present circulation. The Reserve Association shall for a period of one year offer to buy at not less than par the 2 per cent. bonds now held by national banks to secure circulation. It shall be the policy of the Reserve Association to buy up these bonds as rapidly as possible, retire the national bank notes based upon them and issue an equal amount of its own notes. Rather vague plans are outlined for selling these bonds later to the government or to the postal savings bank or exchanging them for future issues at higher rates of interest. In addition to the notes thus issued in place of national bank notes, the Reserve Association may issue circulation, subject to an annual tax of 3 per cent. on the first $100,000,000, 4 per cent. on the next $100,000,000, 5 per cent. on the third $100,000,000 and 6 per cent. on all above $300,000,000. All notes issued by the Reserve Association must be covered one-third by lawful money, two-thirds by United States bonds or bankable commercial paper.

Powers of National Banks.—(1) Banks are to be allowed to accept commercial paper drawn on them,

with certain restrictions; (2) banks may be organized to do business in foreign countries; (3) new classes of national banks shall be established, having authority to receive savings deposits, to lend on real estate security, and to do a trust-company business.

Discussion and Criticism.—The plan outlined above was the center of the discussion of currency and banking reform during the year. It was the theme of numerous writers in the economic, banking, and financial journals, and in the newspapers and general periodicals, and was discussed by bankers' associations and commercial bodies all over the country. An energetic campaign of education was carried on during the year by the National Monetary Commission by means of addresses and writings.

As a rule, the Aldrich plan has had a favorable reception. The majority of the economists who have discussed it have expressed approval in principle. The bankers have been especially favorable. Some thirty state associations of bankers have taken action approving the principle of the scheme. Its general outline has been approved by a large number of commercial organizations.

There has been, however, some criticism of the plan on principle, and a great deal of criticism of many of its details, the majority of those who have expressed approval of the main outline having criticisms to make of particular features.

The most serious criticism has been called forth by the fact that the plan limited ownership in the Reserve Association and enjoyment of its benefits to national banks. Moreover, the provisions of the plan offering to national banks the privilege of loaning on real estate and doing a savings-bank and trust-company business were interpreted as signifying an intention to draw many or most of the present state banking institutions into the national system. Statements made by certain members of the Commission indicated that this interpretation was correct. There are at present in the United States, nearly 13,000 state banks, and more than 1,000 trust companies, not to mention nearly 2,000 savings banks. There can be no doubt that the country is not prepared either to exclude all these institutions from a general plan of banking reform, or to force them to relinquish their state charters and become national banks.

Another feature of the Aldrich plan which came in for much criticism was the method of choosing the several boards of directors. Any plan for a central bank in the United States has two dangers to guard against: first, the possibility of its going down in the slough of party politics as did our two earlier experiments with a central bank; and second, the danger of control by a powerful combination of financial interests. Either event would be fatal, and the public is naturally suspicious of any plan in which these dangers are not clearly avoided. It was for this purpose that Senator Aldrich incorporated the complicated and cumbersome method of choosing the boards of directors to manage the Reserve Association. He and the supporters of the plan claimed that this machinery would make impossible the control of the bank for political ends or by any combination of capital. Published criticism showed that many persons were not satisfied with this assurance.

Another weakness pointed out was in the provisions for the present 2 per cent. bonds of the United States. It was difficult to say just what the vague statements on this subject meant, and it was clear that a satisfactory solution of this difficult part of the problem had not been attained.

The Revised Plan.—The result of these and other criticisms was the issue in October of a revised edition of the Aldrich plan. The most important changes made were the following:

(1) The authorized capital of the Reserve Association is changed from a stated amount of $300,000,000 to an amount equal to 20 per cent. of the capital of the banks eligible for membership;

(2) The plan is extended to allow state banks and trust companies to subscribe for the stock of the Reserve Association;

(3) All subscribing banks (including state banks and trust companies) must hold such reserves against de-

mand deposits as are prescribed in the present national banking law. For time deposits no reserves need be held, except that for 30 days preceding their maturity they must have the same reserve as demand liabilities. Savings deposits, subject to notice of 30 days or more, shall be covered by a reserve of 40 per cent. of the amount required for time deposits in the locality;

(4) In order to be eligible for membership, state banks must have a paid-up capital not less than that required of a national bank in the same locality, and trust companies must have a surplus of 20 per cent. of the capital and a paid-up capital not less than $100,000 to $500,000, according to the size of the city where located, and both state banks and trust companies shall submit to examination and make reports as prescribed by the Act.

(5) To avoid control by local combinations or groups of bankers, certain changes are introduced, limiting the number of directors or officers who may come from a single district.

(6) National banks are given authority to establish separate savings departments, and to lend not more than 40 per cent. of their savings deposits on real-estate security. The plan to authorize separate classes of national banks to lend on real-estate and do a savings and trust-company business is abandoned.

(7) The National Reserve Association must hold against its deposits and notes a 50 per cent. reserve of lawful money; in case the reserve falls below this figure the bank shall pay a tax upon the deficiency, the rate of the tax increasing with the deficiency of reserve. An amount of notes equal to half the bonds on hand purchased of the national banks may be kept outstanding without the above required cash reserve.

(8) The provision for the 2 per cent. bonds is amended by requiring the Treasury to give 3 per cent. bonds in exchange for all 2 per cent. bonds purchased by the Reserve Association from the national banks. The Reserve Association must pay a tax of 1½ per cent. on such bonds and agree not to dispose of them till authorized by the Treasury. As the national banks now pay a tax of ½ per cent. on the notes secured by these bonds, this provision places the cost of raising the interest to 3 per cent. upon the Reserve Association.

End of the Commission's Work.—During the spring and summer there was some criticism of the National Monetary Commission in Congress because of its slowness in bringing in a report and also because a number of its members, originally members of Congress, had ceased to be such owing to retirement or defeat at the polls. On Aug. 22 a law was enacted directing the Commission to present a full report not later than Jan. 8, 1912, and ordering the termination of its existence on March 31. All salaries of members of the Commission and of employees already in the government service were by this act immediately abolished.

In October the Commission held a number of public hearings and it was understood that the rest of the year would be devoted to the constructive work of preparing its report and its final suggestions for amendments to the existing banking laws.

Currency Associations and Emergency Circulation.—Except for the organization of a few currency associations, there have been no developments under the Aldrich-Vreeland law of 1908. No emergency circulation has been issued.

UNITED STATES BONDS WITHOUT CIRCULATION PRIVILEGE

On March 3, the President of the United States signed a bill prohibiting the use of future issues of Panama Canal bonds as security for national bank notes. The passage of this Act is one of the most important events in the banking history of the year. At that time, the total interest bearing debt of the United States was $913,317,490. Four-fifths of this total ($730,882,130) bore interest at 2 per cent. These bonds maintained a market value slightly above par, this being possible, however, only on account of the artificial value given them by the circulation privilege, according to which they may be used by the national banks to

secure their notes. Of these 2 per cent. bonds the banks actually held on March 1 to secure circulation, $661,103,620, or nine-tenths of the total. The amount of 2 per cent. bonds was already so large that it was evident that any future large issue, even with the circulation privilege, would force the whole mass below par, with heavy losses to the national banks and serious reflection on the government's credit. On the other hand, a new issue of bonds at 3 per cent., as already authorized by law, carrying the circulation privilege, would certainly have sent the existing two per cents. below par. The Treasury therefore found its power to issue new Panama bonds practically taken away.

This situation was relieved by the passage of the law described. Hereafter the previously existing bonds will enjoy a monopoly of the circulation privilege, which will probably be sufficient to keep them at par. The new bonds stand purely on their value as an investment. From the banking point of view this action is especially important because it puts a stop to the further extension of bank notes secured by government bonds, the evil features of which are coming to be generally recognized.

The first sale of the new bonds occurred in June, being the first sale in 48 years of government bonds without the circulation privilege. An issue of $50,000,000 dated June 1 was offered to popular subscription. The subscription aggregated three times the amount of the loan, the average price realized being 102½. On Nov. 10, the price bid for the new bonds was 102¼. As anticipated, the old 2 per cent. bonds still maintain par value on the market; the price bid on Nov. 10 was 100¼.

THE POSTAL SAVINGS SYSTEM

Inauguration and Extension.—The new postal savings-bank system, authorized by the Act of June 25, 1910, has been inaugurated and has made rapid progress. In Oct., 1910, the trustees selected 48 post-offices for the initial establishment of the postal savings system. These offices were all of the second class and were located one in each state and territory of the United States; they were to a certain extent regarded as experimental tests of the new system. Deposits were first received at these offices on Jan. 3, 1911. Reports of the business of these 48 depositories showed that during their first two months of business (Jan. 3-Feb. 28) 3,923 accounts were opened and 6,861 separate deposits made, the average amount of each deposit being $21.50. In the same period, 259 accounts were closed by the withdrawal of deposits, leaving 3,664 accounts open on Feb. 28. The total amount on deposit on this date was $133,869. The total population of the 48 towns where depositories were located was about 370,000.

On March 4 Congress appropriated an additional $500,000 for the extension of the service. The same act also amended the original law by giving to the Postmaster-General full authority over the selection of postal savings depositories, the making of rules concerning deposits and withdrawals, and most of the other matters originally left to the Board of Trustees. This change was found necessary as a result of the difficulty experienced in bringing the three trustees together promptly to transact the business imposed upon them. The trustees still control the money deposited and its investment.

The Board of Trustees announced in April that the evidence of deposits would be in the form of "postal-savings certificates issued in fixed denominations of $1, $2, $5, $10, $20, $50, and $100." Deposits may be made only at the office of which the depositor is a patron, and withdrawals may be made only from the depository office.

The experience of the first 48 depositories having shown the practicability of the method of operation, the Postmaster-General named a second group of 50 second class offices to begin transacting postal-savings business on May 1. From this time on, additional groups of 50 post offices were designated every few days during the months of June to September, with the result that nearly all the second class post offices were thus designated. The introduction of the service into the first class offices be-

gan with New York, Chicago, Boston, and St. Louis on Aug. 1. During the next three months other groups, including all the large cities, were designated. In the large cities deposits may be made in many of the substations as well as in the central offices. The designation of third class offices began with a group of 100 to take effect Oct. 7, and the selection of offices of this class proceeded thereafter at the rate of from 50 to 100 per day. By Nov. 6, there had been designated as depositories 411 first class, 1,773 second class, and 2,100 third class post offices, the last group of 100 third class offices being effective on Dec. 4.

The postal-savings system has apparently been well received by the public and the development is in the main satisfactory. The total amount on deposit on Sept. 30 was about $4,000,000. The deposits have in general been larger in the western states than in other parts of the country, due no doubt to the fact that other parts of the country were already better supplied with savings institutions.

In pursuance of the law, the funds have been deposited in local banks, situated for the most part in the same communities as the post offices at which they were received. The rate of interest paid by the depository banks was fixed by the Board of Trustees at 2½ per cent. (the minimum allowed by the law being 2¼ per cent.)

Exchange of Deposits for U. S. Bonds.—Depositors are allowed by law to exchange at par the whole or any part of their deposits for United States bonds bearing 2½ per cent. interest. Since postal-savings deposits pay 2 per cent. interest, there is an inducement to depositors to make the exchange in order to receive the additional ½ per cent. interest. A further inducement is in the provision that the bonds are not counted as part of the maximum of $500 which is allowed to each depositor in the postal-savings system, and there is no limit to the amount of postal-savings bonds which may be thus obtained. The exchange of deposits for bonds may be made only on Jan. 1 and July 1 of each year.

On July 1, 1911, holders of $41,900 of postal-savings deposits took advantage of this privilege and exchanged their deposits for an equal amount of postal-savings bonds at par. A serious situation was brought about when the first sale on the open market of bonds of this character was reported at a price of 92½. This price was taken as evidence that the new postal-saving bonds would be unable to maintain their par value on the market and that depositors who exchanged their deposits for bonds were in danger of suffering heavy loss in the value of their principal, a loss avoidable only by holding the bonds till their maturity 20 years later or to such earlier time as the Treasury might undertake to redeem them at par. The decline of the new bonds below par was apparently something of a surprise to the authorities, and there was evidence in November that the matter would soon be taken up by the Board of Trustees.

GUARANTEE OF BANK DEPOSITS

Constitutionality Affirmed. — The year has witnessed important developments in the field of state guarantee of bank deposits. Foremost among these was the announcement on Jan. 3 of decisions by the Supreme Court of the United States sustaining the constitutionality of the bank-deposit guarantee laws of Oklahoma, Kansas, and Nebraska. The Oklahoma case arose from a proceeding by the Noble State Bank of Oklahoma against the State Banking Board to prevent the levying of an assessment upon the Noble Bank under the state bank guarantee law of 1907. The bank refused to pay assessments into the guarantee fund on the ground that it was solvent and did not want the help of the guarantee fund, and that the forcible levy was therefore unjust and unconstitutional as taxing one person for the benefit of another, besides taking away private property without due process of law, in violation of Article I, section 10, and the fourteenth amendment of the constitution of the United States.

In deciding against the bank, the

Court held that there was no impairment of contract, since the only contract involved was the bank's charter, which was subject to alteration or repeal. As to the claim that private property was taken away without due process of law, the Court held that under the police power of the state "an ulterior public advantage may justify a comparatively insignificant taking of public property for what in its immediate purpose is a private use." The purpose to make bank deposits and the banking business safe is a public purpose sufficient to justify the assessments in question. The Kansas and Nebraska cases involved practically the same principles.

These decisions seem to have finally set at rest all question of the constitutionality of the bank-deposit guarantee system. The scheme, which may still be said to be in the experimental stage, must now stand or fall on its own merits as shown by actual experience of its working.

Experience in Oklahoma.—Important evidence on the actual working of deposit guarantee is furnished by the experience of the state of Oklahoma during the year. The guarantee law was amended on Feb. 25, the principal changes being a reorganization of the State Banking Board and the exclusion of trust companies from the benefits of the law, the trust companies being given until Sept. 1 to drop their banking business. There are, however, few such institutions in Oklahoma.

The tendency of the state banks to gain at the expense of the national banks, which marked the first two years' experience under the guarantee law, met a sharp reversal early in the year. On March 2 the Banking Board called for an emergency assessment of 1 per cent., not on account of any particular failures, but, as stated, to place the fund on a "solid, substantial basis." Almost immediately a considerable number of state banks took measures to enter the national system. From Washington, it was reported that within a month following the 1 per cent. assessment more than 60 state institutions made application to the Comptroller of the Currency to convert their banks into national banks. The number of state banks that actually changed to the national system in March was 32. Between March 7 and June 7, the number of state banks declined from 690 to 638, a loss of 52. Individual deposits in the same period declined from $49,723,978 to $39,202,440, and capital stock paid-in fell from $11,158,250 to $10,001,750. National banks in Oklahoma, on the other hand, increased in number from 229 to 276, while their deposits increased by $4,084,262, being $52,253,351 on June 7.

Further evidence of the difficulties under which the system has labored is to be seen in the attempt of the bankers to secure legislation authorizing the Banking Board to issue 6 per cent. warrants against collectible assets taken from failed banks and further legislation exempting banks from all taxation except their payments into the guarantee fund. Neither proposal was approved by the legislature.

Some difficulty was experienced by the Banking Board in collecting the assessment levied in March. A number of state banks resisted the levy for a time but finally yielded. The Board attempted also to collect the assessment from those banks that gave up their charters and became national banks in order to avoid paying the March assessment. This attempt having failed, the State Bank Commissioner announced in the summer that all such banks would be disapproved as reserve agents for the state banks of Oklahoma. Further action against state banks wishing to change to the national system was taken by the Bank Commissioner in a circular, dated June 28, which announced that no bank would be permitted to nationalize without first complying with a state law requiring the actual paying of all depositors or the securing of written authority from depositors for the transfer of their accounts to a national bank. This action called forth a letter from the Comptroller's office at Washington, informing the Oklahoma Bank Commissioner that the affairs of converted national banks were wholly under the jurisdiction of the Comptroller of the Currency and that no state officer

had authority to compel liquidation of the obligations of such banks.

A statement of the condition of the deposit-guarantee fund was issued under date of Sept. 30. It reported cash on hand, $44,237.40 and assets of $1,641,349.06 acquired from various failed banks, making the total assets, $1,685,586.46. Warrants outstanding on the fund amounted to $350,896, making the excess of assets over liabilities $1,334,690.46.

Other States.—In other states the experience has been less significant. The Nebraska law, after being held up by litigation for two years, became fully operative, with certain amendments, on Aug. 1. It was stated that 664 banks were operating under the laws. Statement was also made that suit would be brought against a dozen state banks which joined the national system while the law was being contested, to compel the payment of the four instalments to the fund which would have been called for if the act had been in force from the date of its passage.

The first assessment under the Texas law was levied on Aug. 8, to pay depositors of a failed bank in Houston. The assessment amounted to $111,636. The banks which adopted the bond-security system, which the Texas law also allows, were not subject to the assessment.

Bills providing for the guarantee of bank deposits were defeated in the legislatures of Montana, South Dakota, and Washington, the result in the latter case being in part due to vigorous opposition from the State Bankers' Association.

The Colorado legislature passed a bill for a deposit-guarantee system with a referendum proviso requiring the submission of the plan to the people at an election in 1912. Two alternative plans were proposed, each bank being free to choose between them: (1) a mutual plan, under which the banks contribute 1 per cent. of their average deposits the first year and ¼ per cent. annually thereafter until the fund amounts to $1,000,000. Further assessments may be called for to make up depletions of the fund. Twenty-five per cent. of the payments are to be in cash, the remainder being in the form of a demand deposit subject to check by the State Banking Board. (2) The alternative plan is called the security plan, and involves either the filing by each bank of a bond equal to its capital stock and surplus, made by a surety company or by three persons of financial responsibility, or the deposit of collateral security by the bank itself.

A variation of the deposit-guaranty system has been adopted by Wisconsin in a law which permits the organization by banks of mutual insurance companies for guaranteeing deposits, the companies to contribute the necessary funds for the maintenance of the scheme by assessment upon themselves.

TRUST COMPANIES AS CLEARING HOUSE MEMBERS

After years of discussion the New York Clearing House has admitted trust companies to membership. This action, taken on May 9, marks an epoch in the history of banking in New York City. The amendment to the constitution of the New York Clearing House provides that any trust company having a capital of at least $1,000,000 may be eligible for membership provided it keeps a cash reserve of 15 per cent. of its deposits and an additional 10 per cent. on deposit with members of the Clearing House Association which hold 25 per cent. cash reserves. The trust-company members must also submit to the regular Clearing House examinations and furnish weekly reports of their average condition during the week and their actual condition at the close of business on each Friday.

The new members began regular clearing through the Clearing House on June 12, at which time 16 trust companies had been admitted, bringing the membership of the Clearing House up to 66.

In Cincinnati also trust companies were for the first time admitted to membership in the Clearing House. Action was taken on Aug. 29, and four trust companies joined and be-

gan clearing on Sept. 6. This brought the membership of the Clearing House up to 14.

At the close of October similar action was being considered by the Philadelphia Clearing House Association. The Association approved a proposition to admit to full membership trust companies having a combined capital and surplus of $500,000. The Association already had two trust-company members, but these members did not have the right to vote. (See also XIII, *Economic Conditions and Conduct of Business.*)

COTTON BILLS OF LADING

The controversy over the bills of lading used in financing American cotton exports which grew out of the failure of two Southern cotton firms in April, 1910, disclosing an extensive use of forged and fradulent bills of lading, has dragged on through the year 1911. At the close of 1910, after several conferences had been held by the American and British interests and various proposals made, the matter still remained unsettled, the only progress attained being a plan by which the railroads issued validation certificates in the case of cotton shipments, certifying that the agent's signature was valid and that the cotton described had been actually received by the railroad for shipment.

This plan was not satisfactory to the European buyers and bankers, and early in 1911 negotiations were renewed with the American bankers looking toward further guarantee of the cotton bills. At a conference representing the Liverpool Cotton Association and the banking interests of Europe, the Southern cotton-carrying railroads, and the Bills of Lading Committee of the American Bankers' Association, held in New York, April 12, the English representatives proposed a plan providing for a central checking office to be located in New York City. This office would serve as a sort of clearing house for all cotton bills of lading against which drafts are drawn on foreign bankers. By this means it was hoped that any irregularity or fraud in the bills would be promptly detected and checked, notice being sent to the interested parties. This plan gained the approval of the New York bankers, and was also indorsed by the Western bankers and the cotton-carrying railroads. It met, however, with vigorous opposition from Southern bankers and cotton dealers.

In spite of the objection of Southern interests the Liverpool representatives and the Committee of the American Bankers' Association proceeded to develop the plan. After making certain changes, which it was claimed removed the objections urged, the plan was accepted and the central bureau opened in New York City on Sept. 1. The principal exchange buyers of New York City were disinclined to recognize the bureau and the Southern interests, so far from being satisfied by the amendments made, increased their protests and took measures actively to oppose the scheme.

Matters thus reached a virtual deadlock. Plans were being matured in November for further conferences. The prevailing opinion of American bankers seemed to be that the validation certificates on through bills of lading were sufficient protection to foreign interests until such time as the liability of railroad companies for genuine bills of lading issued by their agents could be definitely fixed by act of Congress, and that the European bankers were asking too much in seeking to throw the whole responsibility for financing cotton exports upon the American bankers.

In the meantime two important cases were pending before the courts involving the question of the responsibility of New York bankers handling drafts and documents based on cotton exports. In view of the uncertainty on this point, the National City Bank of New York advertised that after Oct. 23 it would not accept cotton bills of exchange having in the text or margin any reference to documents or to merchandise covered by documents. Similar action was reported taken by the National Park Bank and the American Express Co.

STATE REGULATION OF PRIVATE BANKERS

A number of states have enacted new legislation or strengthened old laws regulating the business of private bankers in the interest of greater safety for despositors. In New York the law passed in 1910 was attacked as being unconstitutional. The Supreme Court of the United States, in a decision rendered Jan. 3, held the law constitutional, declaring that the business done was banking and the legislation was justified, since it was enacted mainly to protect poor and ignorant immigrants. A law amending this act for the purpose of making its provisions more stringent was signed by Gov. Dix on June 21. One of its provisions was directed against certain small private bankers who had sought to evade the law of 1910 by incorporating their businesses as express companies.

Montana passed a law regulating the business of private banks and making them subject to examination and supervision by the State Examiner. Pennsylvania passed a law placing private banks, with certain exceptions, under the supervision of a state banking board.

CURRENCY CHANGES

The Congress which ended on March 4 passed a law authorizing the Treasury to receive gold bullion and foreign gold coin and issue gold certificates therefor, provided the amount of bullion and foreign coin so held shall never exceed one-third the total amount of gold certificates outstanding. Heretofore the Treasury has been required always to hold a sum of United States gold coin equal to the amount of gold certificates outstanding. The change will mean a considerable saving to the Treasury in cost of coining gold bullion and reminting foreign gold coins. It also serves the interests of banks which import and export gold, by enabling them to obtain gold bullion from the Treasury for export instead of coin.

Another act passed by this Congress authorizes the Treasury to receive certified checks on national and state banks and trust companies in payment of customs and internal-revenue duties. The previous law, requiring such payments to be made in currency, has been a constant annoyance to business men and to the Treasury officials. (See also XIV, *Public Finance.*)

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INSURANCE

S. S. HUEBNER

LIFE INSURANCE

The Growth of the Business in America.—During the year 1909 the life insurance business recovered from the setback occasioned by the Armstrong investigation, and the business depression of 1907-08. In 1910, notwithstanding the general dullness in business, life insurance made rapid progress, the advance being attributable, according to one leading insurance journal, "to the complete reestablishment of public confidence in the integrity and business efficiency of the company executives; to a growing appreciation of the need for the protection which life insurance affords, and which can be had by no other means; to the splendid efficiency of the men in the field; and also, in some measure, to the fact that economies in management are beginning to produce their natural result in increasing dividends and consequent lowered cost of the insurance, from which as a secondary result come lower lapse ratios than have been known for many years." Not only did the volume of business greatly increase during 1910, but the number of companies increased by over a score, with indications that even a larger number of new companies would begin operations in 1911. At the close of 1910, 230 American companies were in operation, duly licensed to write life insurance under legal reserve laws, and over one-half of this number, it is stated by *The Insurance Press*, were organized during the past five years.

Statistics for 1910.—The complete returns for 214 companies, as furnished by the records of the 1911 *Insurance Year Book*, show that the new business written during 1910 aggregated $1,822,260,287, or nearly $167,000,000 more than was written during 1909. As the *United States Review* explains: "Most of the old-established companies shared in this expansion, while a number of new organizations succeeded in writing a satisfactory amount. In some states the appeal of the local companies for support for home institutions met with hearty response, with the result that the business is more widely distributed than ever before." The New York Life, by writing $157,000,000 of new business in 1910, covered by 68,000 policies, led the list of companies. The Metropolitan came second, having reached the legal limit of $150,000,000. The Prudential wrote $135,000,000, the Mutual Life $120,000,000, the Northwestern Mutual

$119,000,000, and the Equitable $112,000,000.

The premium income of the 214 companies totaled over $593,000,000, or 5 per cent. more than in 1909, while the total income was over $781,000,000. The total assets at the close of the year amounted to over $3,875,000,000, an increase of over $232,000,000, or 6 per cent.; while the surplus reached nearly $600,000,000. Insurance in force on Dec. 31, 1910, reached the stupendous total of over $13,227,000,000, an increase of over $714,000,000 for the year, or 5½ per cent. According to the annual report of the New York Insurance Department, $11,669,000,000 of insurance in force was covered by 6,050,000 policies, an increase over 1909 of nearly 322,000.

Statistics for 1911.—It is to be regretted that no complete statistics are available to show the progress of the life insurance business during the first eight months of 1911. The scattered returns available, however, show a healthy gain over those just enumerated. Statistics of insurance written by 56 companies during the first half of the year 1911 show an increase in all but eight cases, the average increase amounting to about 18 per cent. when compared with the 1910 record.

Dividends.—As regards dividends paid to policyholders, 1910 proved a very satisfactory year, due in large measure to greater economy in management. Increased dividends have the effect of reducing the cost of insurance, and in this way lowering the lapse ratio, which, as already shown, was lower in 1910 than in many years. In 1908, dividends to policyholders amounted to $54,508,369. In 1909 they totaled $63,040,725, and in 1910, $75,353,638, an increase of nearly $21,000,000 since 1908. A part of this increase, however, must be attributed to the larger amount of insurance in force.

Lapses and Liens.—According to the 1911 *Insurance Year Book*, the value of surrendered life insurance policies aggregated $236,729,678, a decrease of over $23,000,000 as compared with 1909; and the value of lapsed policies totaled $277,196,939, or an increase of over $6,000,000.

LIFE INSURANCE

	No. of Companies.	Premium Income.	Other Income.	Total Income.	Total Expenditures.	Total Assets.	Total Liabilities.	Reserve.	New Business.	Insurance in Force.	Surplus.
1910.....	214	593,388,241	187,833,279	781,221,520	540,170,365	3,875,877,059	3,385,821,478	3,225,966,060	1,822,260,287	13,227,213,168	549,998,693
1909.....	189	565,228,893	182,798,999	748,027,892	505,360,453	3,643,857,971	3,170,492,711	3,028,542,773	1,655,899,059	12,513,125,180	540,783,674
1908.....	171	545,858,410	158,071,739	703,930,149	467,675,546	3,380,294,090	2,939,482,079	2,828,657,091	1,468,934,726	11,850,032,581	474,002,778
1907.....	160	533,077,447	145,579,148	678,656,595	438,787,411	3,052,732,353	2,736,329,746	2,650,949,063	1,345,147,040	11,486,115,758	316,439,451
1906.....	138	526,594,898	140,590,694	667,185,592	426,861,363	2,924,253,848	2,557,049,863	2,473,124,563	1,450,829,425	11,253,194,077	367,203,985
1905.....	112	515,996,835	126,061,695	642,058,530	411,850,689	2,706,186,867	2,372,573,020	2,295,289,818	1,725,747,206	11,054,231,621	333,613,847

Surrender and lapse payments amounted to $77,518,465, a slight increase over the payments of 1909. The ratio of terminations by surrender and lapse, however, as indicated by the figures pertaining to 27 of the largest companies, shows a satisfactory decline in 1910. The percentage of terminations by surrender and lapse to the mean policies in force was only 5.05 per cent., as compared with 5.51 per cent. in 1909, 6.33 in 1908, 6.57 in 1907, 8.93 in 1906 and a ten-year average for 1891-1901 of 7.10. In other words, the ratio of surrendered and lapsed insurance to the insurance in force is constantly declining. As stated in the 1910 AMERICAN YEAR BOOK (p. 347) loans against policies showed a large increase in 1909 as compared with former years. In that year policy loans aggregated over $446,000,000, as compared with $414,000,000 in 1908. So large did this increase appear that the executives of many companies warned policyholders against allowing loan liens to remain unpaid. This tendency of increasing policy loans, so apparent during 1909, continued during 1910. At the close of the year such loans totaled $495,000,000, or an increase of nearly $49,000,000 as compared with the preceding year.

the amount of insurance written in 1910 compares very favorably with the $605,000,000 written in 1908. The number of policies in force at the close of 1910 amounted to the gigantic total of over 23,000,000, or an increase of 1,469,000 over 1909. The insurance in force rose to $3,172,606,281, an increase of $207,429,101 over 1909, or 7 per cent., and the premium income amounted to $171,036,805, or over $13,000,000 more than in 1909.

The decline in the amount of insurance written during the year is traceable to the record of the two giants in the business—the Metropolitan and the Prudential Companies. Nearly all the smaller companies, including the John Hancock, increased their business very appreciably during the year. The Metropolitan, however, which increased the amount of insurance written from $246,000,000 in 1908 to $292,000,000 in 1909, wrote only $264,000,000 during 1910. Similarly the Prudential, which increased its writings in 1909 to the enormous total of $359,000,000; as compared with only $216,000,000 in 1908, wrote $324,000,000 in 1910. While showing a decrease, the record of these companies is nevertheless remarkable as compared with

LIFE INSURANCE—SURRENDERS, LAPSES, LOANS AND DIVIDENDS

	Value of Policies Surrendered.	Value of Policies Lapsed.	Policy Loans.	Stockholders Dividends.	Policyholders Dividends.	Total Dividends.	Surrender and Lapse Payments.
1910....	236,729,678	277,196,939	495,099,854	2,140,037	75,353,638	77,493,675	77,518,465
1909....	250,031,205	270,909,576	446,276,468	1,421,436	63,040,725	64,462,161	76,813,974
1908....	250,607,618	314,945,581	414,259,309	1,744,069	54,508,369	56,252,438	74,472,005
1907....	213,551,282	307,688,580	348,458,980	1,137,918	46,339,167	47,477,085	58,904,619
1906....	234,086,670	454,634,793	265,902,863	956,520	40,268,110	41,224,630	57,707,539

Industrial Insurance.—Industrial insurance companies wrote a large volume of business during the year 1910, although the increase in this form of insurance did not show the remarkable growth of 1909. As contrasted with 1909, the statistics for 19 companies show that the amount of insurance written decreased from $803,000,000 to $743,000,000, or about 7½ per cent. Nevertheless, while not equaling the banner year of 1909, all years prior to 1909; and nearly all the other companies, as stated, show 1910 as the banner year of their existence.

At the close of 1910 the Metropolitan had nearly 10,500,000 industrial policies in force with a face value of over $1,500,000,000, collected premiums of nearly $77,000,000 during the year, and paid losses of nearly $21,500,000. The Prudential had nearly 9,000,000 industrial poli-

cies in force with a face value exceeding $1,143,000,000, and collected premiums exceeding $65,000,000. These two companies, together with the John Hancock, possessed $2,978,000,000 of the $3,172,000,000 of industrial insurance in force in the United States on Dec. 31, 1910, or nearly 94 per cent.

INDUSTRIAL INSURANCE

	No. of Companies.	Insurance Written.	Insurance in Force.		Premiums Received.	Losses Paid.
			Number.	Amount.		
1910.....	19	$743,033,066	23,000,340	$3,172,606,281	$171,036,805	$47,634,445
1909.....	21	803,313,730	21,531,007	2,965,177,180	157,794,269	42,795,816
1908.....	19	604,878,284	19,661,147	2,667,388,884	144,880,619	39,667,372
1907.....	17	575,472,552	18,831,884	2,576,192,198	139,065,145	38,960,072
1906.....	19	631,417,769	17,829,046	2,451,177,221	130,215,764	34,864,191
1905.....	20	661,097,015	16,869,758	2,309,886,554	119,879,540	32,398,936

Fraternal Insurance.—Despite the withdrawal of many fraternal insurance societies from the field of insurance, and notwithstanding the difficulties that many of these societies are now laboring under as a result of the unsound practices of former years, the statistical exhibit for fraternal insurance during the year 1910 shows a very appreciable growth and clearly demonstrates that this form of insurance is a business factor of vital importance. The 497 fraternal orders included in the statistics of the 1911 *Insurance Year Book* show insurance in force at the beginning of 1911 amounting to $9,562,511,910, or an increase of nearly $642,000,000. This amount compares very favorably with the $13,227,000,000 of insurance in force with the old line companies. The number of certificates in force amounted to 8,558,093 (an increase of 8 per cent. over 1909), and the amount written during the year reached the surprising total of $1,331,552,713, or an increase of 16 per cent. over 1909. The assets of the 497 orders amounted to over $129,000,000, the income to more than $128,000,000, and the disbursements to over $110,000,000.

The leading feature in the development of fraternal insurance during 1909 was the effort on the part of the National Convention of Insurance Commissioners to secure the enactment of a "uniform bill" by the several legislatures for the efficient regulation and control of these societies. To this end the National Convention of Insurance Commissioners secured the ratification of the proposed bill by the two associations of the fraternal-insurance societies in the United States, the Associated Fraternities of America and the National Fraternal Congress. This uniform bill represented a compromise, both sides making concessions, and provided that inadequate rates, while not to be raised at once, were to be increased gradually. (See 1910 YEAR BOOK, p. 350.)

Fraternal insurance has offered more obstacles to efficient state regulation than any other form of insurance; and the foregoing attempt at uniform regulation and control therefore represents a great step in advance. The year 1910 witnessed the introduction of this uniform bill in most of the states. The legislative committee of the Fraternal Congress reported in September that thus far during the year 1911 thirteen states enacted the bill into law, and also expressed the opinion that other states would do the same despite the opposition of the weaker and less conservatively conducted societies. In its issue of June 8, 1911, the *United States Review* announced that: "Twelve states have adopted the uniform bill for the regulation of fraternal socities advocated by the National Convention of Insurance Commissioners. There are now more than 25 states in which new fraternal

orders cannot be launched at rates lower than those of the National Fraternal Congress."

The Retirement of Emory McClintock.—The resignation of Emory McClintock as Vice-President and Actuary of the Mutual Life Insurance Company of New York marks the retirement from active service of one who was recognized the world over as one of the greatest of living actuaries. Not only was Mr. McClintock the author of an unusually large number of treatises and papers on mathematical and actuarial subjects, but for many years (from 1871 to 1889) he served as actuary of the North Western Mutual Life Insurance Company, resigning to become Actuary and Vice-President of the Mutual Life in 1906. Mr. McClintock participated in the organization of the Actuarial Society of America in 1889 and has been one of the leading spirits in its councils ever since. He was its president, 1895-1897, and was also president of the Mathematical Society of America, 1890-1894. He was elected a fellow of the Institute of Actuaries in 1874, and is a corresponding member of the French and Belgian Actuarial Societies. A recent tribute to Mr. McClintock by one of the nation's leading actuaries (published in the *Market World and Chronicle*, Nov. 1911) in referring to his commanding influence upon the affairs of life insurance, points out that "during the investigations of the Armstrong Committee, Mr. McClintock's testimony, given candidly and without regard to how it might affect any particular company, was clear, sound, convincing material upon which nearly everything in the Armstrong laws, now generally acknowledged to be of surpassing benefit to life insurance and to all sound life insurance companies, was based."

John Fairfield Dryden.—On Nov. 24, 1911, there occurred the death of John F. Dryden, founder and President of the Prudential Insurance Company of America. Mr. Dryden first became interested in industrial insurance during the '60's. He prepared a table of rates and matured a plan, and later organized a friendly society, which, although experimental in nature, convinced him of the feasi-

STATISTICS OF FRATERNAL ORDERS

No. of Orders.	Year.	Total Income.	Paid for Claims.	Total Disbursements.	Invested and Other Assets.	Certificates in Force.	Amount Written During Year.	Amount in Force End of Year.
570	1905	$95,675,423	$72,551,897	$85,154,054	$64,491,954	6,118,938	$1,026,308,429	$8,150,350,736
590	1906	109,452,736	80,907,670	96,028,068	76,502,396	6,890,564	1,111,906,048	8,136,201,919
543	1907	116,699,392	81,633,093	96,116,276	85,544,461	7,282,416	1,212,382,432	8,079,743,281
547	1908	115,087,941	84,084,080	98,854,809	104,500,471	7,887,365	1,120,569,228	8,438,204,968
645	1909	120,474,074	89,899,541	104,680,773	117,185,401	7,909,626	1,203,403,691	8,920,716,227
497	1910	128,631,649	92,279,662	110,168,334	129,426,685	8,558,093	1,331,552,713	9,562,511,910

bility of industrial insurance. The Prudential was organized on Oct. 13, 1875, Mr. Dryden becoming the company's secretary, which position he held until 1881, when he was elected president. During his administration the company grew to tremendous proportions, carrying over 9,000,000 policies, exceeding a billion dollars of insurance, and writing new business in a single year (1909) amounting to nearly half a million dollars.

FIRE INSURANCE

Statistics for 1910.—The fire-insurance business showed a normal growth during the year 1910, although the record of underwriting profit, as regards a large number of companies, shows that the business was not operated under favorable conditions, due in the main to an abnormally heavy fire waste which was not offset by a commensurate increase in premium rates. As regards 624 companies and Lloyds organizations, reported by the 1911 *Insurance Year Book*, the risks written during the year aggregated $36,357,713,046, as compared with $33,117,068,129 for 632 companies reported for in 1909. The total assets of these companies, exclusive of premium notes, is reported at $580,600,192, the capital at $94,734,035, the net premiums at $295,644,715, the losses paid at $125,335,702, and the total expenditures at $256,681,453. The rate of premium per $100 of insurance is given as $1.0822, as compared with $1.1223 for 1909 and $1.1444 in 1908.

Judged by the statistics of American and foreign stock fire and marine insurance companies compiled in the 1911 *Insurance Year Book*, the 1910 record (comprising 329 companies) compares with the 1909 record (comprising 322 companies) as follows: the capital stock increased by over $7,000,000; the assets, exclusive of premium notes, increased by over $39,000,000; and the net surplus increased by over $15,000,000. Net premium income increased by nearly $16,500,000, while the paid for losses increased by $13,250,000 and paid for expenses by over $7,250,000. The increase in total income was $15,651,000 as compared with an increase of

FIRE INSURANCE

										Stock Companies, United States and Foreign.		
	No. of Companies and Lloyds.	Total Assets (Exclusive of Premium Notes).	Capital.	Dividends.	Net Premiums.	Total Income.	Fire Losses.	Losses Paid.	Expenditures.	Risks Written.	Rate of Prem. per $100 Insurance.	Rate of Prem. U. S. Companies Only.
1910	624	$580,600,192	$94,734,035	$35,878,988	$267,134,029	$295,644,715	$214,003,300	$125,335,702	$256,681,453	$36,357,713,046	$1.0822	$1.1006
1909	632	667,605,008	87,504,299	31,180,848	333,372,197	366,751,426	188,705,150	156,038,616	303,975,730	33,117,068,129	1.1223	1.1418
1908	636	611,752,128	84,704,959	28,655,130	313,329,054	339,068,915	217,885,550	167,354,759	307,223,933	30,232,055,437	1.1444	1.1711
1907	654	566,847,069	88,560,679	26,051,585	317,013,383	342,531,049	215,084,709	147,213,603	282,065,025	30,083,316,378	1.1697	1.1815
1906	632	554,660,897	84,255,590	24,218,434	301,116,409	353,922,994	518,611,800	278,236,980	407,108,568	28,082,307,795	1.1469	1.1702
1905	612	550,166,135	75,643,021	23,293,581	273,795,169	296,645,563	165,221,650	126,446,017	243,780,017	25,559,701,079	1.1679	1.1885

nearly $24,000,000 in total disbursements.

According to the 1911 report of the Superintendent of Insurance of New York, the general summary of business during 1910 for all the fire-marine and marine insurance companies doing business in the state of New York shows that they were possessed of $583,650,756 of admitted assets, not including assets held abroad nor premium notes of mutual companies, an increase of $41,588,143 as compared with 1909. The liabilities of the companies, excluding script and capital, aggregated $316,486,560, an increase of $20,691,413. The income of the companies was $332,321,231, and the disbursements $293,027,166, an increase as compared with 1909 of over $15,000,000 in income and nearly $18,000,000 in disbursements. These statistics, however, comprise 204 companies in 1910, or 16 more than in 1909.

Fire Losses.—During the calendar year 1910 the losses by fire in the United States and Canada, according to the *Journal of Commerce and Commercial Bulletin*, aggregated $234,470,650, as compared with $203,649,150 in 1909 and $238,562,250 in 1908, the year of the Chelsea conflagration. Considered by months, the greatest destruction of property occurred during July, August and October, and a comparison with the record of previous years clearly indicates the effect of the serious and protracted drought that prevailed during these months over a large section of the country. Excluding the forest fires of the Northwest, the largest single fire was the conflagration at Campbellton, N. B., which represented a property loss of $3,500,000. As regards the first eight months of 1911, for which records are available, fire losses in the United States and Canada show a surprising increase over even the large waste of 1910, the total aggregating $167,655,550, as compared with $147,647,350 for the corresponding eight months of the previous year, or an increase of $20,008,200. In commenting on this enormous waste the *Journal of Commerce* states that:

> The increase of $30,000,000 in the fire loss of the first half-year of 1911, as compared with the first six months of 1910, has given the fire underwriters a hard experience. Few fire-insurance companies doing a general business throughout the United States have made any underwriting profit this year. Managers of fire-insurance companies, are, many of them, very pessimistic as to the outlook and it is likely that several companies will retire from business before the year closes.

As was the case in 1910 the excessive loss is traceable in large measure to the destruction of exposed houses and villages by the forest fires of the Northwest. The effects of the heavy losses upon underwriting profits have already made themselves apparent in the many cases of mergers and reinsurance effected during the year.

FIRE LOSSES

	1907.	1908.	1909.	1910.	1911.
January	$24,004,000	$29,582,000	$22,735,000	$15,175,400	$21,922,450
February	19,876,600	18,489,700	16,131,000	15,489,350	16,415,000
March	20,559,700	16,723,300	13,795,400	18,465,550	31,569,800
April	21,925,909	26,000,000	19,345,300	18,091,800	17,670,550
May	16,286,300	15,181,150	17,360,400	18,823,200	21,422,000
June	14,765,000	19,512,000	14,435,950	13,183,600	20,691,950
July	18,240,150	15,323,750	15,830,900	26,847,900	25,301,150
August	20,248,000	23,123,000	16,423,000	21,570,550	12,662,650
September	11,440,400	21,431,400	15,043,000	11,700,000	11,333,250
October	13,350,250	22,722,850	17,765,200	37,188,300	13,945,000
November	19,122,200	15,834,350	14,808,550	16,407,000	18,680,600
December	15,783,750	14,629,750	19,975,500	21,528,000	.....

Reports of Investigating Committees.—Two epoch-making reports on fire insurance were submitted by legislative committees in 1911, the first being the report of the Illinois Fire Insurance Commission submit-

ted to the Illinois legislature on Jan. 4, and the second the report of the joint committee of the New York legislature transmitted on Feb. 1, 1911. These two reports deal exhaustively with the subjects of fire-insurance rates, fire waste, expenses, commissions, taxation and discrimination. The attitude of both reports is to the effect that the function of government regulation is to assist and not to obstruct the efforts of insurance companies. In the main, these two reports have been very favorably commented on by the insurance press, and their attitude is one of conservatism and fairness. Briefly summarized the report submitted to the New York legislature recommends the following:

1. That the legislature refuse to countenance a "valued policy" law because such legislation places a premium on arson and "unnecessarily puts temptation in the way of the insured when prosperity fails."

2. That the co-insurance clause is a valuable basis for equitable rating and that its use be promoted.

3. That a return to open competition in fire-insurance rates would be most unfortunate for the public and should not be enforced by state statutes. The good which flows from "combination well regulated" should be recognized by the state. Moreover, insurance companies should be permitted to use rating associations and bureaus for the purpose of developing the principle of schedule rating, for the purpose of determining just rates, and for making agreements to maintain such rates. Anti-compact laws are denounced, and the committee recommends that companies be permitted by statute to combine for rate-making purposes under state regulation, "such regulation to stop short of actually fixing the price at which the companies shall sell their insurance, but which shall be of such a positive nature that all forms of discrimination in rates will cease."

4. That a law be passed providing that rating associations and bureaus file all their schedules and specific rates with the insurance department and that all such associations and bureaus be subject to the strictest state regulation. The committee, however, recommends that the licensing of and control over brokers should cease and that "the present situation wherein rate-making exchanges and associations wield the power which properly belongs to government should be ended."

5. That the state should pass a state license law which will carry out the idea that no person should be permitted to sell or procure fire insurance either as agent or broker until he shall have a certificate from the state giving him the proper authority to do so. The committee feels that it is not ready to recommend that agents and brokers should be licensed only after an examination in which they have demonstrated their fitness, because it prefers to leave the working out of such a plan to the superintendent of insurance, "giving him a wide discretion which will allow him to use all means to gain knowledge about applicants for certificates."

6. That rebating in all its forms be prevented by legislation, since rebates are instrumental in unsettling the insurance business and lead to unfair discrimination between individuals.

7. That the committee is not ready to fix the limit of insurance which any company can write in congested districts, but that the public is entitled to full and exact knowledge on this subject which will show the condition of the several companies and the manner in which underwriting in such congested districts is conducted. The committee therefore recommends that the amount at risk in congested valued districts in large cities be reported by the companies and made a matter of public record.

8. That as regards Lloyds and inter-insurers, the law should specifically define the organization and supervision of such associations.

9. Much emphasis is placed on the subject of fire prevention, since this in the long run controls the rates which companies must charge. A state fire-marshal law is recommended. It is also suggested that the companies and the various commissioners of insurance of the different states should decide upon a common

plan to be followed by all companies and according to which different types of losses shall be carefully classified and reported. Lastly, the value of better building codes is emphasized, and their rigid enforcement recommended. To this end it is suggested that the legislature enact a comprehensive state building law, the principles of which shall be observed in the building codes of the various cities of the state.

The report of the Illinois commission covers most of the subjects already enumerated. A similar attitude is shown as regards valued policy laws, the co-insurance clause, the danger of open competition, the value of schedule rating, and the necessity for agreements between companies to enforce uniform rates, subject, however, to strict regulation. This commission also recommends that all rating be done on the basis of scientific schedules, and that such schedules be submitted to the insurance department and the public. The state, however, is not to determine the size of the rate that a company may charge. Much emphasis is also placed by this commission on the subject of fire prevention. The General Assembly is asked to consider the desirability of a revised building code applicable to the entire state. Moreover, the commission recommends very highly the establishment of a uniform insurance code for use in all the states, such a code to be worked out in coöperation with the National Conference on Uniform State Legislation. In doing this "the commission does not make the suggestion having in view federal control, but that the business of insurance may be supervised, as at present by the several states, but under laws which will have the same meaning and application in Maine and Oregon." Both reports deal so exhaustively with the up-to-date problems of life insurance and are so well prepared that their study will prove highly instructive and beneficial.

State Control of Fire Rating.—During the last two years Kansas, Texas and Louisiana passed laws according to which power is given to the state either directly or finally to fix the rates that fire insurance companies may charge. The state of Massachusetts also passed legislation giving property holders the right to appeal cases, where it is felt that rates are too high or discriminatory in character, to the state for final adjudication. The state of Nebraska passed a law giving the state the power to fix the rate charged by surety companies. Several states during the last year have also taken active steps to prevent fire-insurance companies from combining in rating associations. The question of state-made rates has therefore assumed the aspects of a very important issue, and the years 1910 and 1911 have been marked by a number of epoch-making cases bearing on the constitutionality of state-made rates.

In the suit of the American Surety Co. of New York against the state of Nebraska, Judge Thomas C. Munger, of the United States District Court, rendered a decision declaring the Nebraska law of 1909 unconstitutional. This law constituted the Governor, the Attorney-General and the State Auditor a board with power to fix rates of fidelity and surety bonds executed in the state. The court considered such legislation as an interference with the right to make private contracts, and therefore contrary to the provisions of the fourteenth amendment of the federal constitution. Although this case pertains to the surety business, it is generally felt that it is also directly applicable to fire-insurance rates, because the principles involved are the same. This at least is the opinion expressed in its recent report by the Illinois Fire Insurance Commission. As the reason for its conclusions the court states that:

> The surety business is in no way a monopoly, for individuals and partnerships are free to furnish such bonds in competition with them, and to make any charge or no charge for assuming such risks. No one is compelled to resort to the surety companies as practically the only source from which may be obtained surety bonds. The public interest in the business of such companies is no different from its interest in the business of any large mercantile or manufacturing company, whose capital, experience and facilities may enable it to have a widely extended pat-

ronage, but such characteristics do not make the business one which is affected with a public interest. (State *vs.* Associated Press, 159 Mo. 410, 60 S. W. 91.)

If the state may fix the amount of compensation for which an insurer may lawfully contract for furnishing such insurance, the state may dictate the price for which all other commodities shall be sold, including the price which may be paid for labor. This cannot be done. The fourteenth amendment to the constitution protects the right of those engaged in purely private business to fix the price at which they will sell their services or commodities.

Another case of far-reaching effect is that of the German Alliance Insurance Company *vs.* Foster K. Hale, Jr., decided by the Supreme Court of the United States on appeal from the Supreme Court of Alabama. In 1897 Alabama passed a law to the effect that "in the event of loss or damage the insured may, in addition to the actual loss or damage suffered, recover 25 per cent. of the amount of such loss, any provision or stipulation in the policy notwithstanding, provided that at the time of making such contract or policy the insurer belonged to or was a member of or in any way connected with any tariff association." On the question of the constitutionality of such a law the United States Supreme Court (Justice Harlan rendering the opinion) took the position that the law is legal and does not infringe on the federal constitution nor deprive the insurance company of any rights granted thereby. The Court stated that it appreciated the fact that through combination insurance companies might leave the owners of property at their mercy in the matter of rates and deprive the public of the advantages flowing from competition between rival companies.

Following this decision the legislature of Alabama by a unanimous vote in the Senate and by a vote of 70 to 4 in the House repealed the law imposing the 25 per cent. penalty. It may be stated, however, that at least seven other states had bills, similar to the Alabama law, pending in their legislatures during 1911. By far the most important consequence of this Supreme Court decision was the ruling of Judge John C. Pollock, of the United States District Court, at Topeka, that the Kansas rating law of 1909 was constitutional. While the case was being argued, the decision of the United States Supreme Court, involving practically the same principles of law bearing on the question of constitutionality, was handed down, and Judge Pollock therefore applied the reasoning of the higher court. The opinion, however, does not appear to be in full sympathy with the decision of the higher court, because attention is called to "the gravity of the situation and the ultimate consequences which, in the natural order of sequence, must follow in the wake of such legislation if it be upheld as valid and be extended to all subject matters in which it may, and undoubtedly will, in the future be made applicable."

CASUALTY, SURETY AND MISCELLANEOUS INSURANCE

Statistics for 1910.—Casualty insurance in its various forms has enjoyed a remarkable growth during recent years. At the close of the year 1910 eighty-seven companies (all except one being stock companies) were writing casualty, surety and miscellaneous forms of insurance in the United States, and according to the compilation of Edwin W. De Leon, possessed in aggregate capital of $39,483,764, total assets of $322,399,799, and net surplus of $48,111,541. The vast growth of casualty insurance is indicated by the fact that during the decade 1900-1910 the premium income almost trebled, increasing from $22,668,580 to $66,980,381. Accident and health insurance made the largest absolute gain, the premium income increasing from $3,749,000 in 1890 to over $30,000,000 in 1910. Employers' liability insurance, among the important lines, made the next largest gain, the premium income increasing from $851,000, in 1890 to over $9,000,000 in 1900 and over $28,500,000 in 1910. This form of insurance will likely pass accident and health insurance in the near future, owing to the in-

creasingly drastic nature of employers' liability legislation.

Legislation.—As regards legislation, casualty insurance held a very prominent place during 1910. 594 bills affecting casualty insurance companies were introduced in the various state legislatures during the year, according to Mr. De Leon, and of these 119 became laws. Most of this legislation related to liability insurance and will be referred to under that heading.

Personal Accident and Health Insurance. — Seventy-four companies were engaged in this kind of underwriting during 1910, but of this number only 32 companies confined their activity exclusively to these two lines, the remaining companies writing other forms of casualty and miscellaneous insurance. Thirty-seven companies secured nearly 95 per cent. of the business written. Premium income increased 13 per cent. during the year, losses paid increased 23 per cent., and the loss ratio increased nearly 2 per cent.

In last year's issue of the AMERICAN YEAR BOOK special mention was made of the uniform health and accident insurance laws passed by the state of New York (Chapter 636) and Massachusetts (Chapter 493), the purpose of which is to standardize provisions of accident and health policies and prevent the use of clauses which are considered by the insurance departments of these states to be deceptive, unnecessary or otherwise unsatisfactory. These laws have resulted in much discussion in the insurance press during 1911, especially in view of the action taken by the insurance departments of these two states to enforce the same. Both departments adopted a ruling that the beneficiary and accumulation clauses are inadmissable, and that companies which refuse to eliminate them would be in conflict with the insurance authorities of the state. This attitude of the departments led to a conference between the companies and the insurance commissioners of New York and Massachusetts with a view "to hear any interested persons concerning the legality and desirability of further writings of what is commonly called beneficiary insurance; also at the same time to listen to arguments on the general subject of accumulation benefits." The conference met in Feb., 1911, and was attended by representatives of 34 of the largest companies, representing over 90 per cent. of the premium income from health and accident insurance. The great preponderance of opinion expressed was in favor of acceding to the wishes of the two insurance departments, and the action taken by the conference was almost unanimous. After adjournment of the meeting, Vice-President Faxon of the Aetna Life gave out the following statement:

> The entire matter was considered from the viewpoint of the companies and that of the commissioners, in the hope of securing the discontinuance of both beneficiary insurance and accumulations. While the great majority of the companies represented were in favor of taking such action, there were sufficiently strong reasons advanced by the representatives of the other companies to prevent unanimous action.

In his last annual report, Insurance Commissioner Hardison of Massachusetts pointed out that, in view of the above-mentioned laws, the companies have filed for consideration nearly 900 policy forms, and about 500 "riders" to policies. Many of these policies, it is explained, are unmistakable in meaning, but others are hedged with numerous lengthy and indefinite conditions often limiting the benefits which are apparently promised. He goes on to state that:

> It is a question whether the statute should not have gone still further and prescribed the language to be used in accident and health contracts. As it is now, the policies of no two companies are alike in the language employed to comply with any provision required by the statute. A court decision interpreting the language employed by one company would probably not be applicable to the language used to cover the same point by another. Consequently such decisions are more limited in their scope than would be the fact if they applied to every policy issued in this Commonwealth, as is the case when the court interprets the meaning of the Massachusetts standard form of fire policy. But while the results of the statute are not wholly satisfactory to the Insurance Department and not ap-

proved by many of the companies, it is safe to say that the present situation from the policyholder's standpoint is an improvement over former conditions.

Other important events of recent date relating to accident and health insurance are the following:

1. The Wimberly Act of Louisiana, which fixes the time of paying indemnities and which declares null and void any policy provisions which run contrary to the act.

2. The defeat of the South Carolina bill compelling companies to pay all accident and health claims within 60 days after the receipt of proofs of loss, on pain of a penalty of 10 per cent. of the amount due as attorneys' fees, if the claim is collected by suit or by an attorney.

3. The adoption of measures last July by the accident underwriters in their convention at Portsmouth looking to the combination of their association with the Casualty and Surety Underwriters. This object was accomplished last October when the International Association of Casualty and Surety Underwriters was organized by the consolidation of the membership of the Board of Casualty and Surety Underwriters and the International Association of Accident Underwriters.

Employers' Liability Insurance.—The progress of employers' liability insurance during 1910 is indicated by the fact that, whereas in 1909 24 companies were writing this form of insurance in the United States, the number increased to 35 in 1910. The premium income increased from $25,500,000 to over $30,000,000, and the ratio of losses paid to premiums received from 42.6 to 57.7 per cent.

Many state legislatures devoted much time in 1910 and 1911 to the consideration of legislation pertaining to employers' liability and workmen's compensation, and as a result the following laws have been enacted, and either have gone or will soon go into effect, viz.: those of California, Kansas, Maryland, Montana, New Hampshire, New Jersey, New York, Ohio, Oregon, Washington and Wisconsin. Bills were also approved by state commissions in Illinois and Minnesota, and by the American Federation of Labor, the National Civic Federation and the Chicago Conference.

Space forbids a detailed comparative analysis of these laws, but the reader is referred to the excellent table prepared by Edwin De Leon on pages A-89 to A-92 of the 1911 *Insurance Year Book*. (See also XVI, *Labor Legislation*.) Of the several acts enumerated, the New Jersey law, which went into effect July 4, 1911, has attracted most attention, owing to its drastic features. According to this law employees injured by an accident "of which the actual or lawfully imputed negligence of the employer is the actual cause," are compensated according to an elective schedule of payments, provided the employee has not been wilfully negligent at the time of the injury, the extent of such wilful negligence to be submitted as one of fact to a jury subject to the review of the court. All occupations are covered by the law, and the employer has the burden of proof as regards contributory negligence. The benefits provided by the law are outlined in great detail, and are classified according to temporary disability, permanent disability, partial disability but permanent in quality, death with actual dependents, and death with no dependents. In case of temporary disability the compensation amounts to 50 per cent. of the wages at the time of injury, subject to a maximum compensation of $10 a week. If wages, however, are less than $5 per week full wages shall be paid for a period not exceeding 300 weeks. In the case of permanent disability the payments are the same for a period not exceeding 400 weeks; while for partial disability which is permanent in quality, payments are definitely defined according to the extent of the injury, and in case of death the compensation is graded according to the number of dependents. When the employer and employee by agreement accept the schedule, all compensation payments must be made by the employer without regard to the negligence of the employee. It is also provided that such an agreement is a surrender by the parties of their right to any other method, form or amount of compen-

sation; and that all contracts of hire, unless expressly waiving this section, shall be assumed to have been made subject to this act.

The Wisconsin law has also attracted much attention. Here the compensation is also elective, except as to the state and its municipalities where it is compulsory. In the absence of written notice the employer is presumed to have elected the method of compensation as prescribed by the law, and after an election has been made, suits for compensation are not permitted. Compensation in case of total disability amounts to 65 per cent. of the wages, not exceeding a total of four years' earnings; and in the case of partial disability to 65 per cent. of the wage decrease, no total, however, to exceed four years' earnings. In the case of death, the compensation is prescribed as amounting to four years' earnings, the minimum to be $1,500 and the maximum $3,000.

The effect of laws, like those enacted in New Jersey and Wisconsin, upon employers'-liability insurance rates, has been very marked. Thus as regards coal miners, the gross rates in New Jersey increased from $2.30-2.90 to $6.00. In the case of other leading industries the increase in rates is indicated as follows:

LIABILITY RATES IN NEW JERSEY.

Industries.	Rate Prior to July 4, 1911.	Rate After July 4, 1911.
Contractors	$3.00–13.70	$1.25–20.00
Electric schedule	.30– 6.50	.50– 6.00
Leather and shoe schedule	.50– 1.45	.75– 3.00
Lumber schedule	.85– 3.25	1.50–10.00
Meat packing house and stock yard schedule	1.80– 4.30	2.25– 5.00
Metal schedule	.70– 6.00	1.00–15.00
Milling schedule	1.30	2.00
Mining schedule	.70– 7.20	6.00– 7.00
Miscellaneous schedule	.30– 5.75	.60–10.00
Oil schedule	.70– 5.05	1.25– 5.00
Paper schedule	.60– 2.15	.75– 4.25
Pottery and glass	.20– 1.30	.75– 3.00
Printing schedule	.60	1.25
Stone schedule	1.80– 5.40	1.75– 6.50
Textile schedule	.30– .80	.60– 4.50
Tobacco schedule	.35	.60– .75
Vessel schedule	.70– 1.25	1.35– 3.50
Warehouse and store schedule	.35– 2.75	.35– 6.00
Wood schedule	.35– 1.95	.60– 3.00

A compilation prepared by President H. W. Bolens of the Wisconsin Manufacturers' Association furnishes a comparison of Wisconsin's liability rates with those prevailing in New Jersey. This comparison aims to show that the Wisconsin rates are in all cases 40 per cent. higher than in New Jersey and an average of six and one-half times the old rates, for risks under the compensation table.

Two other recent events deserve special mention because of their important bearing on employers'-liability insurance.

1. The opinion of the Court of Appeals on March 24, 1911, which declares the workmen's compensation act of New York (Chapter 674 of the laws of 1910) unconstitutional.

2. The creation in Dec., 1910, of the Workmen's Compensation Service and Information Bureau. The purpose of this organization is to formulate plans of compensating workmen against industrial accidents, to devise and recommend safety devices, to collect and formulate industrial-accident statistics, and to promote the business interests of the companies writing employers'-liability insurance. As Mr. De Leon states, "The need for such a bureau and the great possibilities for its usefulness are apparent when the rapidly changing conditions in legislation, as well as in industry, are considered. . . . The year 1910 is memorable as marking the first step toward that concert of action among companies engaged in liability insurance that has for its ultimate purpose the elevation of the business to the highest plane of utility and permanence."

Fidelity and Surety Insurance.—This form of insurance showed a normal growth during the year 1910, the net premiums collected amounting to $13,854,793, as compared with $12,682,693 in 1909; and the loss expense amounting to $2,907,720 as compared with $3,347,239 in 1909. The ratio of losses and claim expenses to premiums was 21 per cent. as compared with 29.7 in the previous year. Five companies, four of which were newly organized, entered this field of underwriting during the year. The Towner Rating Bureau was also

established during the year for the purpose of furnishing rates on all classes of bonds to all companies engaged in the fidelity and surety business. Nearly all American companies are now included in the membership of this Bureau and have greatly benefited from its existence.

Considerable interest has been aroused through the efforts of the federal authorities to regulate the bonding of government employees by requiring that all companies shall furnish to the Treasury Department quarterly statements of their operations, these statements to be used by the Secretary of the Treasury as a basis for fixing the limit of liability that each company may assume on government contracts. This limit was placed by law at 10 per cent. of the capital and net surplus of each company. These federal regulations, enacted about two years ago, have been enforced rigidly and during the last two years have occasioned much concern in fidelity and surety circles, many prominent underwriters sharing the view that the attitude of the federal authorities is an encroachment on state control.

Owing to certain difficulties encountered in collecting indemnities, Congress in its session of 1909 appointed a joint commission to investigate the matter. The report of this commission made public early in March, 1911, was sweeping in character and declared that the bonding companies have not fulfilled their promises; that the present method of dealing with the companies should be abandoned; that the government should itself insure the fidelity of its employees; and that a fund be started for this purpose and a bonding bureau be established in connection with the Treasury Department to undertake this work. The report also asserted that rates were too high; that losses have not been paid either promptly or fully, owing to insolvency or litigation based largely on technicalities. Commenting on the conclusions of this report, one leading insurance journal states that:

> There is undoubtedly some measure of truth in these charges, since two companies, the Aetna Indemnity and the United Security, have recently failed and were for a long time in a decadent condition. Litigiousness by surety companies in order to escape loss or effect savings by compromise was generated by the foolish rate-cutting carried on by the companies for several years. But this fault, we think, cannot justly be charged against them within the last two or three years. The charge that rates were as a whole too high we do not believe to be well founded. The government business was, for several years, decidedly unprofitable and has been at no time excessively profitable.

Among the other important happenings of the past year may be mentioned the New York law of 1911 regulating contract bonds. This refers to surety bonds in favor of the state or municipality and greatly increases the liability under such contracts. It provides that contractors on state and municipal work must furnish a bond of a surety company, the penalty of which amounts to one-third of the contract price of the work. The bond "besides guaranteeing the faithful performance of the contract, obligates the prompt payment of the sum due all persons supplying labor and materials in connection with such contract. It further provides that parties furnishing labor and materials for such contract work for which payment has not been made shall have a lien on the amount secured by the bond of the contractor and the right to intervene and be made a party in any action instituted by the state or municipality upon such bond, and have his rights and claims adjudicated in such action, the state or municipality having priority in the settlement. The law also provides that if the liability of the surety is insufficient after the judgment of the state or municipality has been satisfied to meet all the claims for labor and materials, the claimants on account of such supplies shall have the remainder, if any, distributed *pro rata* among them." According to the opinions of certain underwriters this law will either result in increased rates or in the refusal by the companies to accept such contract risks under the new law.

XV. SOCIAL ECONOMY AND SOCIAL QUESTIONS

JOHN COLLIER

EDUCATION IN CITIZENSHIP

CIVIC AND ETHICAL EDUCATION

Status.—The past year has shown a noteworthy increase of interest in civic education and ethical training. In the past, training in citizenship and training in the moral life have not, in this country, been regarded as proper functions of the state. In leaving out religion, the public school saw no way to retain ethical instruction. In leaving out politics, it saw no way to teach civics in a vital, contemporaneous form. Thus, it has come about that the church, reaching continuously a minority of the population, has been practically the sole ethical educator, and the political parties, with their necessary exaggeration, sectionalism, and appeal to emotion, have been the main sponsors of citizenship training.

New York City.—Illustrating from New York City, which in both the above respects is fairly typical of American cities, the following facts suggest the situation: Neither ethics nor student self-government is a part of the public-school training. Only one school gives prominent place to ethical training, as distinct from sectarian foundation—the Ethical Culture School, with its Lower East Side affiliation, the Downtown Ethical Society. On the side of civic education, an investigation by the People's Institute of New York has brought out that of 27,010 students in 18 of the 19 high schools in New York City, only 2,579 were studying civics in any form; and that of the minimum of 3,000 hours of school work required for graduation from New York high schools, only 40 hours are allotted to civics. One high school, the High School of Commerce, with an admirable course in citizenship, has 61.5 per cent. of its pupils continuously studying civics.

THE SOCIAL CENTER

History of the Movement.—The central, significant development of the past year toward both these ends of moral and civic training, has been the development of the social center as a form of the school extension. (See also XXXVI, *Education.*) It is necessary to antedate the year 1911 in order to give the best conception of the social-center movement. Rochester, N. Y., in 1907, inaugurated the wider use of its school buildings on a radically democratic basis. The example of Rochester has been the predominant influence in the subsequent development of the movement throughout the country. The main features of the Rochester experience have been as follows:

Public discussion of an absolutely free character was encouraged. Any group of citizens was entitled to the use of a school building for civic, recreational or social purposes, subject only to the safeguarding of school equipment. Civic clubs rapidly took form in schools throughout the city and were federated into a central council. In order to throw the school influence over the whole community, including the women and children, social and recreational features were introduced—music, amateur dramatics, motion pictures,

social entertainment by neighborhood groups; but the forefront of the movement was civic. The Rochester movement, at first universally applauded, swiftly aroused the hostility of the controlling political organizations and, in a less formal measure, of the conservative church element.

In no instance did a civic club either surrender itself to partisan, political influences, or allow itself to be used, save as a forum of free speech, by social or religious radicals. Nevertheless, the social center was made a political issue in Rochester, the Board of Education standing firmly in favor of the movement and the city council opposing it, in the measure of withholding appropriations. The movement has thus been gradually starved although nothing has been done to diminish, on the theoretical side, the thoroughgoing character of the school board's permission, namely, that the local community may use the school building as it sees fit. In 1911 social centers were continued, but for a reduced period of time, and in 1912 this period will be further reduced to not more than three or four months. The president of the Rochester School Board, George M. Forbes, who, with Edward J. Ward, was the pioneer of the movement, has been defeated for reëlection, and, unless the progressive political elements win the offices in Rochester, the movement is likely further to retrograde.

Rochester's Experience.—Rochester has thus made three contributions of first moment to the science of social centers:

1. The social center, organized on the basis of thoroughgoing democracy, and held within the limits of non-partisanship in political matters and non-sectarianism in ethical matters, is practicable in a typical American city.

2. It requires several years to bring forward this new type of community self-expression to a point where it can dispense with outside leadership and an endowment of funds from the municipal treasury or philanthropic sources.

3. The movement is a genuine force for citizenship training, and as such is feared by the political machine.

Conferences.—The past year has seen two events which give evidence of the nation-wide character of the movement that originated in Rochester.

In April, 1911, was held the first Southwestern Social Center Conference at Dallas, Texas. Several of the states adjacent to Texas were represented, and the forward character of the movement in Texan cities is instanced by the recent construction of five school buildings, designed to allow the maximum of social-center uses, in Dallas.

A more comprehensive convention was the first National Social Center Convention held at Madison, Wis., in Oct., 1911, with 150 delegates from 15 states, including South Carolina, California and Massachusetts. The Madison convention was organized under the joint auspices of the Social Center Association of America (New York) and of the University Extension Division of the University of Wisconsin. This convention organized into the Social Center Association of America, with Dr. Joshua Strong, of the American Social Service Institute, New York, as its President; Edward J. Ward, University Extension Division (Madison, Wis.), Secretary. Membership in the National Association is unlimited, and there are no dues, but voluntary contributions may be accepted. Annual conventions will be held henceforward. As the vital issue in social centers seems to be the right of unlimited public discussion, and of democratic neighborhood organization in school buildings, this feature was very prominent at the convention and was emphasized in the constitution of the national body. At the same time, the child, as the proper cornerstone of all education, was not lost sight of, and a large view over the movement as it exists in different cities and states shows that most of the activities now conducted in social centers relate primarily to the child. The varied activities in the social center are made to fit into one another in such manner that the child is drawn into a civic club or into auxiliary clubs, and the adult is

drawn into social and recreational activities, the social center being thus a genuine, organic unit, appealing to the family as a whole.

Related Agencies.—Various movements which may be regarded as forerunners of the social center, in that they have an open membership and conduct social-center activities, although not making use of public buildings, have continued during 1911. Prominent among such bodies are Ford Hall, Boston; the People's Institute, New York; the Brotherhood, Rochester; social settlements like Hull House, in Chicago; Greenwich House, in New York; and South End House in Boston. Other organizations contributive to the social center and standing for some of its principles, are too numerous to mention, but may be instanced by the Home and School Leagues of many cities, the City Clubs, the Public Education Associations, the Granges, etc.

The Essential Idea.—It can probably be said that the essential idea in the social-center movement, as related to the public school, is the idea that the school cannot and should not attempt to meet all of the community's or individual's needs during the regular school hours. There should be school activities to which the compulsory-attendance laws of the various states do not apply, and these auxiliary activities, capable of being organized on a cooperative and partially self-supporting basis, are perhaps best fitted to provide the civic, ethical, and emotional training of the child and of the whole population. Viewed from this perspective, the social-center movement is seen to be a solution to many vexed problems and to be the unconscious goal of a great diversity of special movements. It should therefore be borne in mind as the ultimate answer to many of the problems of commercialized recreation which are treated below.

COMMERCIALIZED AND PUBLIC RECREATION

Development of Commercialized Amusement.—Recreation has been extensively commercialized in America. (See below, the theatre, the commercialized dance, etc.). The school has been devoted to the training of the intellectual faculties, and to the inculcation of technical and trade efficiency. The emotional life of the child, as of the adult, which must necessarily be spontaneous, and is therefore to be broadly viewed as amusement, has been left out of account by the school, and has been, of necessity, ministered to in a somewhat narrow and special way by the church. As the result of this specialization, commercialized amusement has taken on an importance new in the history of the world, and America is to-day witnessing the culmination of this development, which has only been seen in its true bearing within very recent years.

Need of Public Recreation.—Certain investigations conducted or completed within 1911 have made it clear that incalculable moral and social evil results from failure by the community either to regulate or provide the people's amusement. Notable among these are the investigations of the Chicago and Minneapolis Vice Commissions, the investigation of the Recreations Committee of the New York Child Welfare Exhibit, the continuous investigations of the New York Committee on Dance Halls and Vacation Resources, and of the National Board of Motion Picture Censorship.

We are here particularizing on the outright provision by the municipality, through social centers and other institutions, of wholesome recreation.

PARKS AND PLAYGROUNDS

Chicago.—The most extensive and notable provision of outdoor recreation by the state is witnessed in Chicago, where the small parks of the South Park, West Park and North Park system, and of the Special Park Board, have developed rapidly during 1911. Here can be seen the most successful and intensive development of park resources to be witnessed in America, and probably in the world. The small parks,

ranging in size from one to fifteen acres, are devoted to competitive games, bathing, sports, gymnastics, play by the younger children, and outdoor pageants. They are likewise, as a rule, provided with field houses which have been built with a view to maximum utility along recreational and university-extension lines. One of the triumphs achieved in many of the Chicago small parks is the beauty of architecture and landscape gardening, which are positively enhanced, rather than impaired, by the intensive, practical utilization of park property. Other of the larger parks in Chicago, like the Sherman Park, have been developed as park playgrounds on a more extensive scale, where space has been sufficient to allow the segregation of play activities in one part of the park and the development of the remainder for promenade and purely aesthetic purposes.

Kansas City, through its Board of Public Welfare, St. Louis, through the Recreation Commission of the Park Department, and Boston, in connection with the movement of "Boston—1915," have likewise undergone rapid development in directions broadly similar to those of Chicago.

A significant additional development in Chicago, seen particularly in the West Parks, is the movement toward a democratization of the government of the park. This effort, which has been most successful in West Park No. 2, is hampered by political conditions, but its goal is the creation of a small park system that will be analogous to the social center, as described above, and which will transform the small parks into neighborhood institutions of a more complete character and, at the same time, economize the money of the tax-payers.

National Playground Association.—The central dynamo of the movement for the development of parks along lines of play and of neighborhood self-expression, is the National Playground Association of America, whose offices are in New York. The National Playground Association of America is working through field agents in different parts of the country, for the creation of municipal recreation commissions, whose duty it will be to coördinate the recreational activities of the city and to provide experienced and expert guidance for these commissions.

REGULATION OF COMMERCIALIZED AMUSEMENTS

However, the most vital and practicable function of the municipality, in relation to the people's play, is still the function of regulating the commercialized amusements.

Statistical facts as to the extent and variety of commercialized amusements are only partially available. It is known that there are about 1,500 regular theatres in the United States, and about 14,000 motion-picture theatres. The saloon is elsewhere treated in this volume. There are more than 600 licensed dance halls in New York City, and similar proportionate numbers in the other industrial centers of the country. The leisure time of many immigrant populations is consumed, to a degree recognized by few investigators, in such resorts as billiard rooms and coffee houses. The investigations of the New York Committee on Dance Halls and Vacation Resources have shown that the summer parks, excursion steamers, etc., of New York (and, presumably, of many other cities), are used in illegal and evil ways by those forms of the social evil which are parasites on the places of commercialized amusement. In general, it may be said that the policy of American cities toward this vast body of commercialized amusements has been one of neglect, of complete *laissez faire*, running on for a certain period and culminating in a violent public scandal, to be followed by extreme and unenforceable, restrictive laws, which, in their turn, have become inert, and the general result has been the exploitation and, frequently, the degradation of the public through the commercialized amusements.

Apart from the saloon question, the conditions above outlined are best illustrated in the theatre and dance hall.

THE THEATRE AND MOTION-PICTURE SHOWS

Decline of the Theatre.—The American stage has come, progressively, to be dominated by New York. It is less well known that the New York stage is in its turn dominated, not, primarily, by resident inhabitants of that city, but by the traveling public. This latter development, of profound influence on the character of New York theatres, has been accelerated of late years through the increased facilities for travel to New York on the one hand, and through the extraordinary growth of motion-picture shows, which are now the main form of dramatic entertainment for the resident New Yorker. The traveling public, seeking excitement, seeking liberation from serious interests, calls for a type of theatrical production which does scant credit to that historic institution, the theatre. In the theatrical field, combination and speculation have steadily advanced, and the end is not yet in sight. During 1911, the most prominent effort to counteract sensationalism and financial domination in the theatre, the New Theatre, in New York, was abandoned. The reasons given for the failure of the New Theatre are many, the foremost being the too great size of the auditorium, rendering the building unfit for intimate and realistic drama. It is probable that the New Theatre will be reorganized in the light of its previous experience, and much is still to be hoped from this movement.

The social question raised by these facts is: "How can the theatre be restored as a public institution and a free vehicle for art expression?"

Motion-Picture Audiences.—The theatrical situation has been most vitally affected by the growth of motion pictures. This growth has continued through 1911 in almost geometrical progression. The daily audience at motion-picture shows has been estimated at 4,000,000 by the National Board of Censorship, and by other investigators at 7,000,000 or 8,000,000. This audience, to 90 per cent. of its total, is a neighborhood audience, and essentially a family audience. Numerically, it probably exceeds by six-fold or more, the daily audience of all other forms of theatre combined. This audience witnesses a daily change of program, and in addition to motion pictures, it hears music, joins the chorus of popular songs, and frequently looks on at a stipend of cheap vaudeville. It is, in the main, an audience which hitherto has never patronized the theatre.

The Motion-Picture Show as a Popular Theatre.—Here, it would seem, is the basis for a genuinely popular and democratic theatre. It can be said that motion pictures, as a whole, do strike a certain common denominator of popular interest, which is the more representative because every motion picture is produced with a view to simultaneous distribution in every state of the Union. But, as yet, motion pictures have entirely failed to adapt themselves to the demand of particular localities or particular classes of people. Furthermore, they are not the vehicle, as yet, of genuine art expression viewed as the product of the individual creative artist. As this situation is peculiar to America, and has become greatly accentuated during the past twelvemonth, it may be instructive to give further detail.

Commercial Domination.—In America there are some thirty studios, producing for the American market. Their product goes to about 14,000 theatres through an intermediary called the "rentor." There are two great combinations of manufacturers, the Motion Picture Patents Co. and the Motion Picture Distributing and Sales Co., both with offices in New York. No rentor can purchase, and no exhibitor can display the product of both these groups, but must select between one and the other. Already we see a restriction of art, resulting from commercial conditions.

But the matter has gone much further. In order that the manufacturers may be guaranteed a market, and that the speculative risk in a given picture may be reduced, the practice has been adopted of sale through contract. This contract in-

volves the purchase by the rentor of a given manufacturer's product, selected, not according to the merit of the individual picture, but according to the day of the week on which such a picture is "released" for the market. In other words, the rentor does not consult the special demand of his customers, the exhibitors, and select his stock accordingly, but secures his stock through a routine method, and is, consequently, compelled to dispose of it in an equally routine way. While theoretically the exhibitor has a restricted right to select his daily programmes, actually he is largely compelled to take them in a routine manner and in his turn, nor can he keep a popular picture and show it again, day after day, as this would throw the "distributing circuit" out of gear.

And to complete the mechanicalization of the motion-picture art, one of the important trade groups recalls its product from circulation after six months, and neither of the trade groups ever reissues a film, no matter how intrinsically good it may be, after the first edition is worn out. As a result, no motion-picture rentor in the country is stocked with more than a very small percentage of the total output of motion pictures, and what he has, he has through accident rather than through selection. About the only manner in which popular approval or disapproval can be registered is in favor of the total output of one manufacturer as against the total output of another. This public selection is very strongly felt, so that manufacturers exert themselves to raise the general average of their output, and the general average of the total output has steadily gone forward; but, as between one and another picture produced by a given manufacturer, there is little or no selection and there is, consequently, no premium before the manufacturer to give much thought or spend much money on any one film. This is the more true, in that the whole momentum of the trade, as now organized, causes a picture to pass, day by day, from show to show, so that there is no incentive to the exhibitor to give particular advertising to any one film, and no opportunity for the audience to spread through the neighborhood the news that a peculiarly attractive film is being shown at a given theatre.

Thus it is seen that the motion-picture show has fallen under a commercial domination as complete, though of a different order, as the domination that is now paralyzing the regular theatre in America. Will the year 1912 see a change for the better in this situation?

Signs of Change.—There are already signs that there will be such a change. First, the present quantitative growth of motion-picture shows cannot continue indefinitely, and when the market has been filled to the limit, there will ensue a more intensive development, which may result in a change in trade habits. It is not likely that even present conditions will invite a strong reaction against motion pictures through rendering them uninteresting, for the reason that motion pictures are incalculably superior to any other form of cheap entertainment which the whole family can enjoy in common; and this innate superiority insures them a future, even though they do not go ahead in excellence.

The other promising condition is found in the initiative of pioneers like the Charles Urban Co. of London, the inventors of the color process, photographically applied, in motion pictures. During 1911, the Urban Co. has operated theatres in several American cities, devoted exclusively to the color product, and to long series of pictures gathered around a single subject and continued in the same theatre for several weeks consecutively. Similarly, a few pictures have been produced and circulated in theatres, churches, colleges, etc., which for an entire evening unroll about a single theme, such as the Divine Comedy of Dante. Success has attended both of these ventures and other similar ventures, which point toward a system of exhibition radically different from the present stereotyped methods outlined above.

A third influence for the better is seen in the immense growth during 1911 in the demand for educational motion pictures on the part of

churches, schools, farmers' institutes, and propagandist bodies of various sorts. This demand is not at present being met by the motion-picture trade, but may be expected, during 1912, to create its own supply.

There has been incorporated in New York a "Modern Historic Records Association" with offices at the National Arts Club, New York City. The object of this corporation is to use phonographic records and motion picture films to preserve historic events for future generations.

Regulation of Motion-Picture Theatres.—To view the problem from the standpoint of municipal responsibility it may be said that nothing significant has been done by the American municipalities toward further improvement or regulation of the regular theatre, but much has been done with reference to the motion-picture theatre. The National Board of Motion Picture Censorship has continued its work and extended its control, until at present more than 99 per cent. of all motion pictures produced for the American market are authoritatively passed on by this board, whose offices are in New York. Several states and cities have inaugurated local boards which work in coöperation with the national board and apply, in some instances, standards of a more stringent or a more local character. Among these, the San Francisco board, the Chicago board, the Detroit board, the Massachusetts state police and the Boston and New York license bureaus, have continued their work, begun prior to 1911. Boards have been created in Los Angeles, Portland, in the state of Pennsylvania, and municipal and state action is pending in Missouri and New Jersey. A municipal committee, appointed by the Mayor of New York, has gone exhaustively into the entire problem of motion pictures, with a view to framing adequate municipal regulations bearing on the structure, sanitation, programme and general conduct of the motion-picture theatres. Their report is obtainable from the Mayor of New York.

Many states have acted to compel the adequate lighting of the interior of motion-picture theatres and to insure their proper ventilation. Information on all these lines is obtainable through the National Board of Censorship.

THE DANCE HALL

In New York State a law has been passed to regulate the licensing and general conduct of commercial dance halls. This law, declared unconstitutional in its first form, has been reënacted with great care, both for legal and practical detail, and has recently gone into effect. The Recreations Commission of St. Louis has done extensive investigation into all forms of the commercial dance and the allied commercial amusements.

But it seems to be generally recognized, that whereas the theatre, commercially viewed, has a legitimate future in America, the dance should be forthright provided for through municipal initiative. Milwaukee, under the Socialist régime, has, during 1911, conducted frequent municipal dances, which have been effective in diminishing the popularity of beer gardens throughout the city, and have been, incidentally, self-supporting. For municipal purposes, several model dance halls have been operated in New York, most of them under the supervision of the Committee on Dance Halls and Vacation Resources of Working Girls. A company, the People's Recreation Co., has been organized in New York to create so-called model motion-picture shows, dance halls, and other commercial amusements, to be operated on a self-supporting basis. In the school buildings of many cities and rural districts, dances have been inaugurated, open to the public.

A word should be said regarding the social significance of the commercialized dance. It has been estimated that 100,000 persons a week, at least, patronize the commercial dance in New York City, and, until almost the present time, to attend the commercialized dance was to enter the zone of the social evil and of the illicit traffic in liquor. Of almost every American city, this is equally true.

The above pages are to be considered, as a whole, in relation to the problem that is fundamental to them all, namely, the proper civic, moral and emotional education of the people. It has been quite impossible to cover exhaustively a field whose vastness and complexity may be said to have doubled even in 1911. An attempt has merely been made to indicate the more significant items in this field.

THE BOY SCOUTS

Bearing on all of the above should be mentioned the boy scouts. This movement has progressed phenomenally. In Oct., 1911, there were more than 300,000 boy scouts actively connected with the Boy Scouts of America, with more than 3,000 master scouts. The American Boy Scout movement, with a somewhat explicit military purpose, has diminished in numbers during 1911. The offices of the Boy Scouts of America and of the American Boy Scouts are in New York. There is likewise being formed a movement, to be national in character, analogous to the Boy Scout movement, the movement of "The Camp Fire Girls." Information about this last-named movement can be had by addressing Dr. Luther H. Gulick, 1 Madison Avenue, New York.

PAGEANTS

During 1911 a number of interesting and successful pageants have been held. The word "pageant" in America has been loosely used to cover almost anything from a charade to an electric illumination. It is more correctly used to describe parades or group-movements, dramatic in quality, representing in formal symbolism either historic events or civic aspirations. Conforming to this description there have been large pageants in the following cities during 1911: Taunton, Mass., Northampton, Mass., Lawrence, Mass., Bennington, Vt., New London, Conn.; an historical and agricultural pageant at Thetford, Vt.; a pageant symbolizing the old northwest at Milwaukee. The Russell Sage Foundation, New York (through W. C. Langdon), has paid especial attention to pageants, and authentic information and advice can be obtained from that source.

HOUSING AND CITY PLANNING

Three movements in America—the movement toward improved housing, the movement for city planning, and the movement for improved methods and new principles of taxation, have come together during 1911, and are henceforward parts of one more comprehensive movement.

The practical interdependence of these movements has been illustrated in Milwaukee, where the attempt to build municipal tenements has been, in 1911, frustrated, largely through the inability, on the part of the city, to obtain from the state permission to conduct excess condemnation. In New York, the Municipal Art Society, whose predominant interest has been city planning, has taken the lead in forcing through the legislature a proposed constitutional amendment, providing for excess condemnation. In New York, a proposal, recommended by the Municipal Congestion Commission, to halve the tax rate on buildings, thus introducing a qualified form of the single tax, is being most vigorously supported by the Committee on Congestion of Population (320 Broadway, New York) whose main effort hitherto has been in the direction of city planning. The same measure is receiving a vigorous support from the Federation of Churches in New York, which has been more particularly engrossed in the housing problem. The "Boston—1915" movement is attacking, comprehensively, the three problems, viewed as aspects of one problem.

The National Housing Association (offices, 105 East 22d Street, New York), held its first convention in New York in June, 1911, more than 50 cities being represented. The Na-

tional Town Planning Conference held its third annual meeting in Philadelphia, in May, in conjunction with the first Municipal City Planning Exhibit, organized and financed, officially, by the city of Philadelphia. In Boston, a state commission, for the metropolitan district, is at work on a city plan. A civic commission of Pittsburg is working, through experts, in three directions —sanitation, transit, and street problems. (See also XI, *Municipal Government;* and XXXIV, *Landscape Architecture.*)

Several notable experiments in cooperative and paternalistic housing have been inaugurated: at Corey, Ala.; at Vandegrift, Westmoreland Co., Pa.; at South Omaha; at Forest Hill Gardens, N. Y. The last-named experiment represents an investment of $2,500,000, by the Russell Sage Foundation. It is designed rather for the professional than for the laboring classes, but represents a thoroughgoing attempt to eliminate the speculative element from real estate operation, and to develop a large tract as a community unit, with the most approved methods of profit sharing and the best landscape gardening and architectural ability.

COÖPERATION

Coöperation, other than agricultural coöperation (see XXII, *Agriculture*), has not notably increased in 1911, although there has been manifest growth of general interest in the subject. The methods of the English coöperative societies still serve as the model for most American experiments. In various immigrant colonies coöperative stores have been started, as, for example, the following in Massachusetts: three in Polish communities, four in Lithuanian, two in Hebrew quarters, and others in Finnish, Italian and French quarters of different cities. In California there are about 50 coöperative stores with a total capitalization of about $700,000 (representing 7,000 stockholders), with yearly sales of about $2,500,000. There is a central wholesale house (the Rochdale Wholesale Co. of San Francisco), in which 46 of the stores hold stock. Most of these stores are in the hands of socialists.

In New York there has been organized a Coöperative League which operates a coöperative hat store on radical lines (The Coöperative Store, Clinton Street, New York), and which, during the first four months of its existence, has been notably successful.

An Italian socialist coöperative journal has been established, *La Cooperazion*, at Barre, Vt. This journal organized in July a socialist cooperative congress in Boston.

The Right Relationship League (Minneapolis) has continued during the year its substantially successful work in the establishment of cooperative stores. In San Francisco there has been established a cooperative bank.

SOCIAL RESULTS OF FOREIGN IMMIGRATION

Educational. — The concentration of large immigrant populations in districts equal in area to complete cities, has long been recognized as creating a formidable educational problem. During 1911 definite work has been inaugurated to meet this problem. Heretofore, in the school system of any typical large American city, an identical curriculum has been provided for all sections of the population. This curriculum had its historical origin in a period of American history when the population was all English-speaking and largely Anglo-Saxon. It had been modified through the years mainly along lines of business and industrial training. It has now come to be realized that the temperament and social background of an Italian or Lithuanian child is so radically different from the English temperament and background as to call for pedagogical methods peculiar to the needs of such peoples.

As a result of an investigation in the city of Montclair, N. J., by Prof. Paul Hanus, of the Boston School of Pedagogy, the curriculum of schools in the quarters strongly tinctured with a foreign element has been extensively modified. At present an exhaustive investigation, under the leadership of Prof. Hanus, is being conducted in New York City on behalf of the Board of Estimate and Apportionment, the financial and legislative body of that city. It is expected that the results of this investigation, though pointing in the direction of many needed changes, will point nowhere more imperatively than in the direction of a somewhat fundamental change both in the subject matter of teaching and the methods of pedagogy in the schools for immigrants. The results of this investigation will not be fully available before 1912.

Political.—Among the other social problems and conditions which are undergoing modification through the influx of immigrants, may be mentioned: political, as seen in the fact that Italians show little inclination to be naturalized (there are only about 18,000 Italian voters among the approximately 600,000 Italians in New York). This voluntary non-franchisement of a large Caucasian population invites serious thought in the large American cities. In cities like New York, the numerical increase and keen political interest of the foreign-born Jew seems likely in the very near future to shift the control of politics from the Irish to the Jew. The growth of socialism in the industrial centers of America has been greatly accelerated by the influx of foreigners.

Sunday Observance.—The question of Sunday observance has been utterly confused, and needs to be fundamentally worked over, in view of the fact that in many large cities the believers in some other day of worship than Sunday have become numerically one-fourth or more of the population. With this factor goes the radically different conceptions even of the German and Italian populations, as to the proper employment of the Sunday holiday. Most American states have on their statute books laws forbidding the operation of commercial amusements on Sunday, and these laws, in so far as they are enforced, clash with the prepossessions of most of the immigrants from Continental Europe. The result is a large extent of non-enforcement in practically every great American city, and the rising demand that American states shall abandon the idea of Sunday observance and substitute therefor the idea of a day of rest for all workers, made compulsory through law.

Industrial.—The idea that has largely reigned in the past, that European immigrants uniformly tend to lower the wage rate through competition, has been greatly qualified by the experience of the past two years, during which the women wage workers in various trades, such as the clothing trades, have conducted successful strikes for increased wage and other advantages (such strikes have taken place in Chicago, Philadelphia and New York). The foreign worker, in other words, is showing, at least, in some lines of trade, a keen instinct for organization. At present the most critical aspect of the low-wage problem, at least among women, is probably to be seen in mercantile establishments, where the native-born American woman predominates, and where the attempt to organize the workers has not been very successful as yet. (See also XVI, *The Labor Movement in 1911.*)

The Women's Movement in Industry.—An important sociological significance attaches to the development of the women's trade union movements, especially in Chicago and New York. These are aggressive movements to organize women in various trades, with the same general objects as pertain to male trade unions. From the beginning, however, the women's trade union movement has been many-sided in its objects, with a strong emphasis on the educational element, particularly on the education of immigrant women workers, and the movement has likewise contributed to the woman suffrage cause. The last annual convention of the Women's Trade Union League of America was held at Boston in June.

Distribution of Immigrants.—Movements in the direction of the distribution of immigrants have been successful mainly in so far as they involved distribution among the various American cities; but the anomaly still maintains, of populations like the Italian, predominantly agricultural in their training and habits, now crowded by hundreds of thousands in the most congested quarters of the great cities.

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THE LIQUOR TRAFFIC AND PROBLEM

FERDINAND C. IGLEHART

Consumption.—The people of the United States consumed last year 1,900 million gal. of beer—more than any other nation. Germany came next, with a consumption of 1,700 million, and England managed to get along with 1,400 million. One hundred and thirty-four million gallons of spirituous liquors were drunk in this country, which was more than the consumption of any other country except Russia, which used 232 million gal. The consumption per capita of either malt or spirituous liquors was not as great as in a number of the countries of Europe.

Internal Revenue Returns.—By the report of the Internal Revenue Commissioner for the fiscal year ending June 30, 1911, it is found that the government received in taxes for spirits $155,279,858.25, an increase over the year 1910 of $7,250,546.71, and for fermented liquors $64,367,777.65, an increase over the receipts for 1910 of $3,795,498.11. These figures include all sales as a beverage and for scientific, industrial and medicinal purposes beside.

The report gives also the quantity of liquors which were withdrawn for consumption: 134,600,193 gal. of distilled spirits, 5,712,504 gal. more than in 1910; and 63,216,851 bbl. of fermented liquors, 3,731,730 more than in 1910. The increase in consumption and production will be found, in the detailed report, to have been in the "wet" states and districts, especially in those containing the large cities.

The Prohibition Movement.—The liquor business has met enemies in national prohibition in Iceland; the

revolt in Scandinavia; in the bitter rebuke of the German Emperor at the danger and damage of the beer-drinking habit to the individual and nation; and in the well-nigh universal struggle against it at the ballot box in all English-speaking countries of the world. The business is in a struggle more or less fierce in almost every locality in the United States.

Maine.—The legislature of Maine passed a prohibitory law in 1851, which was repealed in 1856, and re-enacted in 1858, in which year the people voted prohibition into the constitution of the state. The legislature of 1911 submitted the question to a popular vote, which took place in September, which resulted in 60,853 votes for the retention of prohibition, and 60,095 against it, making a majority for constitutional prohibition of 758.

New Hampshire, Vermont, Rhode Island and Connecticut are all under local option, and had no change in their liquor law. An attempt to repeal the "bar and bottle" law in Massachusetts by the last legislature failed.

New York has local option by towns as a unit, with privilege of voting every two years, on four forms of license—saloon, liquor store, drug store, and hotel. Of the 933 townships in the state, 416 have no license, 324 full license and 193 partial license. A net increase of 102 no license townships has been made in the last two and a half years.

New Jersey has no local option law. A form of modified local option, however, is available, to cities that adopt the new commission government charter, provided for by the Walsh act, which was passed by the legislature of 1911.

Delaware.—Two of the three counties of Delaware are dry by local option. The past year has made no change in excise legislation.

Pennsylvania has no local option law. The license law permits the filing of remonstrances against applicants before the court of quarter sessions, for the privilege of selling liquor. There are 11,148 retail licenses and 1,769 other licenses; 612 boroughs and cities have licenses and 309 boroughs and one city are dry; 690 townships have license, and 864 towns are dry. 63 counties have license and four counties are dry. There is one saloon in the state for every 687 people.

Maryland.—Maryland has no general local-option law, but certain counties have local option by special legislation. Ten counties are wholly dry; three are wholly wet. There is some dry territory in the city of Baltimore, made so by special legislation.

West Virginia.—Of the 55 counties of West Virginia 15 are wet and 40 are dry. There are 500 saloons in the state. The legislature at the last session, submitted an amendment to the constitution of the state, to be ratified or rejected by the people at the general election in 1912.

Virginia.—There are 64 counties of Virginia dry, by a local option law; 1,450,000 people are living in dry territory. There are 560 saloons in the cities and 120 in the country; 141 of the 162 incorporated municipalities are dry.

North Carolina.—In 1908 North Carolina went dry by a popular vote of 44,196. The law allowed the sale of alcoholic stimulants, which do not intoxicate. Under this provision the "near-beer" trade grew to such an extent that the legislature of 1911 passed a second prohibitory law, known as the "near-beer law," which prohibits the sale of any beverage containing alcohol.

South Carolina.—By popular vote 36 of the counties of South Carolina are dry, and the six remaining counties permit the dispensary system.

Georgia is under statewide prohibition. The "near-beer joints" in the dry cities of the state have sold regular beer undisturbed. Joe Brown, Jr., nominated for governor by Democratic primaries in December, is said to favor a popular vote on constitutional prohibition.

Florida.—The election in Florida, Nov. 8, 1910, resulted in the defeat of the prohibitory amendment by 4,600. Gov. Albert W. Gilcrist vetoed three bitterly fought bills, unfriendly to the saloon. Under local option, which now prevails, there are 35 dry counties and 12 wet, out of the 47 in the state.

Alabama.—The liquor interests

won in a popular vote in Alabama, and that state went out of the prohibition column. The last legislature enacted a local-option law and four counties have, under the provisions of that law, voted in the saloons. The rest of the state is dry.

Mississippi has statutory prohibition. The year witnessed no change as there was no session of the legislature. Of the 59 parishes of Louisiana 13 are wholly dry, 19 are wet and 8 are partly dry, by local option.

Texas.—The legislature of 1911 submitted the question of license or no license to the vote of the people of Texas, and prohibition was defeated by something over 7,000 majority. The state, however, is very little of it wet, as the old local-option law still obtains, and 167 counties are dry.

Arkansas.—By local option the saloon has been voted out of 65 of the 75 counties of Arkansas.

Oklahoma.—When Oklahoma came into the Union the people voted prohibition into the constitution. A proposition to repeal the constitutional provision was defeated in Oct., 1910. The law is one of the most severe of any in any state, providing a heavy penalty for infractions.

Kentucky has precinct, magisterial-district, municipal and county option. At the last election both political parties put local option by counties as a unit in their platform. Of 119 counties 95 are dry; 18 others have saloons in but one municipality, and 2 others in but two.

Tennessee is under state-wide prohibition. It is under the administration of a governor elected upon a platform of rigid enforcement of the state prohibitory law, in contrast to its lax enforcement by the administration preceding him.

Missouri.—In Missouri the constitutional amendment voted on on Nov. 8, 1910, was defeated by a majority of over 200,000, leaving the state under local option. There are 114 counties in the state, of which 58 are dry. The county-unit bill was passed by the House, but was strangled by parliamentary tactics in the Senate of the recent legislature.

Ohio.—There are 55 dry counties in Ohio, and the 33 remaining counties are partly dry, including 75 per cent. of the territory free from the legalized saloon, and a majority of the population living therein. The liquor interests are making efforts to submit an amendment to the state constitution, providing for the license of intoxicants.

Indiana.—The county local-option law of Indiana, under which 69 of the 92 counties of the state voted dry, including 64 of the 94 cities of the state, was repealed by the legislature of 1911, and for it was substituted the Proctor city and township option law, exceedingly friendly to the liquor interests. As a result of this law the saloon has gone back into 40 of the 70 dry counties, and into 40 of the 64 cities.

Illinois.—Municipal and township local option prevails in Illinois. Of the 1,496 towns and precincts, 1,036 are dry. One-half of the geographical area of Chicago is dry, and yet there remain in that city 7,300 saloons of the total of 9,000 in the whole state.

Michigan.—Of the 83 counties in Michigan 39 are without saloons, under the provisions of the county option law. At the session of the legislature in 1911 the license law was amended permitting the licensing board in any township, village or city to refuse to grant licenses within their jurisdiction, whose purpose is to close saloons in towns and villages located in wet counties.

Wisconsin has a local-option law, under the provisions of which the saloon has been voted out of 860 communities, towns, villages and cities.

Iowa.—The state-wide prohibitory law of Iowa was emasculated by the Mulct law, permitting saloons on the petition of 65 per cent. of the voters. Sixty-two of the 99 counties of the state are wholly dry.

Minnesota has local option for villages, and some of her cities. Nearly one-half of the villages are dry, and four-fifths of the cities that may vote have rejected the saloon. There are 4,500 saloons in the state.

North Dakota is under constitutional provision, which was secured by the vote of the people when the territory came into the Union.

South Dakota has township, town and city local option. There are 12

dry counties of the 51 in the state. There are a thousand townships and 150 incorporated towns where no saloons are permitted.

Nebraska is under municipal local option. Twenty-eight of the 90 counties are dry, and 32 cities of the state, with a population of 1,000 or more, including Lincoln, the capital, have voted out the saloon.

Kansas.—Constitutional prohibition, which was adopted in Kansas in 1880, is in force to-day.

New Mexico.—The constitutional convention of New Mexico voted against a prohibitory provision in the constitution, and rejected even a county local-option clause, by a majority of nine in a vote of one hundred. The new state prohibits saloons outside of villages containing less than 100 inhabitants. It gives city councils and town boards power to license, regulate or prohibit liquor. Roswell, the second largest city in the state, with 10,000, is without a saloon.

Colorado has municipal, ward and precinct local option, under which 116 municipalities have voted dry. Two-thirds of the residence portions of Denver is dry, one-third of the residence districts of the city of Pueblo, the next largest city, is also dry. Ninety per cent. of the rural districts of the state are without license. A popular vote on county local option will be asked for in 1912, under the initiative feature of the initiative and referendum law.

Wyoming.—By legislative enactment, saloons are prohibited outside of incorporated towns and cities. Five of the latter are now dry, by action of their legislative councils. Forty per cent. of the people live in dry territory.

Montana has a county local-option law, whose defects have rendered it inefficient. Aside from the Indian reservations, which are dry under statutory legislation, most of the territory of the state is wet. The last legislature passed a law limiting the number of saloon licenses to be issued to one to each five hundred population.

Idaho has a straight county local-option law. Twenty of the 27 counties in the state are dry, as are 22 of the 25 cities. All of the townships are dry, and 51 of the 63 villages have voted out the saloon.

Utah.—A county local-option bill which passed both branches of the legislature in Utah was vetoed by the governor, and the local communities by their use of the town, city, and county provisions have removed the saloon from three-fourths of the territory of the state.

Arizona has a local-option law for counties, exempting the incorporated cities; for cities or towns, and for judicial precincts. There are 900 retail liquor places to 150,000 white population.

Nevada is very wet. Under the license law the only dry territory in the state is the Indian reservation, where the government enforces prohibition, and the town of Imlay, where there are restrictions in the deeds to property. The city of Reno has one saloon for every 20 male citizens.

California.—The legislature of 1911 gave to California its first local-option law, and direct vote, with municipalities and county supervisorial districts as the unit. Last year saloons were closed in 90 small towns and cities. The liquor interests vigorously opposed woman suffrage in California, under the objection that their votes would be unfriendly to license, but to no avail.

Oregon.—Two prohibitory measures were submitted to popular vote in Oregon, both were defeated by 20,000 majority. The local option law remains; under its provisions 15 of the 34 counties in the state are dry.

Washington.—The state of Washington is under municipal and rural county local option. Seventy towns have voted dry. Of the 39 counties five are entirely dry, and 25 more are dry, outside of incorporated towns. There are 433,000 people living in dry territory, and 720,000 people living in wet territory; 70 per cent. of the geographical area of the state is dry.

The District of Columbia is under license and has 500 drinking places; 60,000 live in two prohibited areas.

Alaska.—In Alaska the liquor traffic is controlled by the courts, who

issue licenses. Such issuance is optional with the judges. The last act of Congress on the subject prohibited the sale of intoxicants in mining camps, unless the camp supported an officer to keep the peace. A federal prohibition law for Hawaii will be asked for at the next Congress.

The Prohibition Campaign. — The saloon has been removed from two-thirds of the area and nearly one-half of the population of the United States. The prohibitory laws in some of the states and localities are enforced well, in others very poorly, and in some there is virtual nullification, especially in the large cities. Temperance people charge that the Interstate Commerce Law, which permits the shipment of liquors from wet into dry territory, is responsible for much of this failure to enforce the law. The last Congress failed to allow an amendment asked for, putting an end to this transfer of liquor from a wet into a dry territory. It is expected that the various temperance organizations of the country will unite in asking the Congress of 1912 for the relief which was denied in 1911.

The brewers and distillers have each a national and state organization, minutely related to the 220,000 retail liquor dealers, and to those cooperating with them in the manufacture and distribution of their product. They have ably edited periodicals and quantities of literature and talented advocates everywhere. The anti-saloon people are also well organized. There are in the fight the Third Party Prohibitionists, pioneers in the contest; the Women's Christian Temperance Union, with its 300,000 members; the Good Templars, active for 70 years; the Sons of Temperance; the National Reform Bureau; National Temperance Publication Society; temperance societies of almost all denominations, Protestant and Catholic; the Inter-Church Temperance Federation, and the Anti-Saloon League of America. This League is an interdenominational non-partisan movement, with an organization in every state, which is administered with ability, energy and efficiency and whose representatives occupy 35,000 pulpits of various denominations every year.

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SOCIALISM AND ANARCHISM

ALGERNON LEE

SOCIALISM

General Nature.—The modern socialist movement dates from about 1848. It has nothing in common with various schemes, theories, and communistic sects existing before that time, with which it is sometimes confused. It may be defined as an international movement of the wage-working class (aided by individuals from other classes) in opposition to the dominant influence of the propertied classes, and having for its aim the establishment of economic liberty and equality of opportunity through the abolition of private ownership of socially used means of production, and the substitution of public ownership and democratic administration of all things necessary for the conduct of production and transportation on a large scale. The reader should be warned that no brief definition can give an adequate idea of the movement. A fuller treatment will be found in The AMERICAN YEAR BOOK for 1910.

This movement appears wherever the capitalist system of industry arises. It grows with the development of capitalism, through experience of the antagonism of interest between employers and wage

workers. It is neither religious nor anti-religious, and does not concern itself with questions of private morality. It is primarily a political movement, though its conception of political action is a broad one, the education and organization of the masses for self-reliant united action being held essential, and the winning of offices regarded only as a means, not as an end in itself. The political socialist movement everywhere stands in close relation with the efforts of the labor unions for the improvement of wages, hours, and conditions.

Beginning in Western Europe, the socialist movement has extended to every civilized country; wherever it has gained a foothold, it has had a persistent, generally slow, but almost uninterrupted growth. It now counts among its adherents more than one-tenth of the adult population of the civilized world—that is, of Europe, North and South America, Australasia, Japan, and the Europeanized portions of Africa. Its proportionate strength is still greatest in Western and Northern Europe, where it claims the support of from 25 to 40 per cent. of the population.

Socialism in 1911: Germany.—The German socialists have continued their powerful and well disciplined activity, both in the Reichstag and state legislatures and among the people. The increasing cost of living has been one of the chief points of attack, but no question has been ignored. When it seemed likely that Germany and France would be dragged into war by the conflict of commercial and financial interests in Morocco, the socialists of both countries organized simultaneous anti-militarist demonstrations, in which millions of workingmen took part, and which did much to avert an armed conflict. In several by-elections during the year the Socialists won Reichstag seats formerly held by Liberals, Conservatives, or Catholic Centrists.

Austria had this year its second election under the system of manhood suffrage. At the former election, in 1907, the Socialists polled 1,087,000 votes and elected 87 members to the Reichsrath. It was recognized that this great success was largely due to the enthusiasm evoked by the triumph of the struggle for manhood suffrage. Before the election of 1911 the Socialist leaders frankly said that they expected the Socialist representation to be reduced, perhaps as low as 50 members, in a natural reaction from this early victory. Their fears were not realized. The Socialists have 82 members in the new Reichsrath, and have the satisfaction of having practically wiped out the Anti-Semitic or so-called "Christian Socialist" party, their most dangerous opponent.

Sweden.—The general election in Sweden in September resulted in a great increase of the Socialist popular vote and of their representation in the Riksdag. The effect of the victory was so great that the reactionary Lindman Ministry was forced to resign, giving place to a Liberal and Radical coalition ministry.

Italy.—The Italian Socialists have made vigorous though so far unsuccessful demonstrations against the conduct of the government in the Tripolitan affair, which they characterize as highway robbery.

Russia.—In Russia the socialist movement, together with every other manifestation of popular life, still languishes under the savage reaction which has prevailed since 1907. Though Premier Stolypin has fallen a victim to his own devices (having been killed by a police spy at the instigation of rival officials), there is as yet no indication that a more liberal policy is to prevail. There are, however, some signs of a revival of industrial activity in Russia, and it is expected that within a few years this will reawaken the movement for political liberty and social progress.

Japan.—In Japan, also, reaction has the upper hand. The socialist organization in that country (never very strong) has been temporarily crushed by a series of military executions. On the other hand, the constitutional revolution in China has already given the opportunity for the beginnings of socialist activity on a small scale.

United States.—The total vote of the Socialist party of America in the Congressional election of Nov., 1910 (estimated at 700,000 in the AMERI-

CAN YEAR BOOK for 1910), was shown by the official count to be 605,000—an increase of 181,000 over that cast in 1908. No general election having been held in 1911, an exact statement of the further increase of Socialist strength cannot be given. The party organization (whose members pay dues of 25 cents a month and actively conduct the party's affairs) has grown by more than 50 per cent. during the year and now counts more than 100,000 members.

The local elections held throughout the West in the spring showed a continued rise in the Socialist tide. In April the Socialist party carried the cities of Flint, Mich., Butte, Mont., Berkeley, Cal., and several smaller places, and elected a minority to a great number of city councils and county and village boards. A compilation of returns, made by W. J. Ghent of Washington, showed that in June the party could boast of 392 elected officials, including one member of Congress, 18 legislators in five states, 32 mayors, and 341 aldermen, county supervisors, village trustees, members of school boards, etc.

The state and local elections in November duplicated these victories. The Socialists carried Schenectady, N. Y., eight cities in Ohio, five in Utah, and a few in other states, besides electing aldermen or other local officials in many places in Connecticut, New York, New Jersey, Pennsylvania, and other states. They also won representation for the first time in the legislatures of New York and Rhode Island. The list of socialists holding elective offices now numbers probably about 600.

The general activity of the Socialist party has been greatly strengthened during the past year by the fact of its having a member to voice its demands in the House of Representatives at Washington. Congressman Berger's most important official acts have been the following: (1) The introduction of a resolution calling for the withdrawal of the United States troops concentrated on the Mexican frontier during the revolt against President Diaz, it being alleged that this concentration of troops amounted in effect to a threat of armed intervention; (2) a resolution providing for an investigation of the circumstances under which the McNamara brothers were arrested in Indianapolis and taken to Los Angeles, it being alleged that this arrest was actually an act of kidnapping by the authorities in violation of the constitutional rights of the accused; (3) a resolution proposing a constitutional amendment to abolish the United States Senate; (4) a resolution providing for a convention to revise the federal constitution; (5) a bill to regulate interstate extradition of persons accused of crime; (6) a bill to establish a system of old-age pensions on lines generally similar to those prevailing in England, France, and several other countries.

In each of these matters, Mr. Berger's action in Congress has been accompanied by a widespread popular agitation conducted by the party organization through the holding of mass meetings and parades, the distribution of millions of leaflets, the circulation of petitions, and other means.

The Socialist party has always favored equal suffrage for both sexes, but within the last year it has taken more energetic action in support of this demand than ever before. It took a vigorous part in the successful campaign for woman suffrage in the states of Washington and California and is continuing the work without pause throughout the country. Early in 1912 a monster petition will be presented by Congressman Berger calling for a constitutional amendment to extend the franchise to women on equal terms with men.

While there was no national convention of the party in 1911, the year was signalized by the holding of the first national conference of Socialist elected officials, which took place at Milwaukee, Aug. 12 to 14. Such conferences are in future to be held every year, for the purpose of exchanging the results of experience in different places and coördinating the local activities of the party's elected representatives.

The Socialist party maintains headquarters in the office of the national secretary, John M. Work, at 205 West Washington Street, Chicago.

Bibliography.—A complete bibli-

ography of socialism would contain the titles of many thousands of books, pamphlets, and articles. The following books, to be consulted in the order named, will give the student an introduction to the literature of the subject and will probably suffice for most readers: Morris Hillquit, *Socialism in Theory and Practice;* John Spargo, *Socialism;* H. M. Hyndman, *Economics of Socialism;* Frederick Engels, *Socialism, Utopian and Scientific;* Karl Kautsky, *The Social Revolution;* Thomas Kirkup, *History of Socialism;* Robert Hunter, *Socialists at Work;* Jessie Wallace Hughan, *American Socialism of the Present Day.*

ANARCHISM

Anarchism and socialism are diametrically opposed in theory and almost universally hostile in practice. Socialists regard political institutions as a normal phenomenon and seek by political action to transform the state into an agency for the democratic administration of socialized industry. Anarchists look on the state and the church as fundamental evils, resulting from ignorance and imposture and forming the basis for economic oppression. By a direct attack on what they regard as political and religious superstition, they seek to eliminate religion and abolish the state and to emancipate every individual from all legal authority and from all ethical codes except such as he individually may regard as belonging to the "laws of nature" and may voluntarily obey. Accordingly, they repudiate political action and permanent or disciplined organization.

Some anarchists, but not all, advocate the "propaganda of deed"—that is, political assassination considered as an act of defiance to constituted authority and as a means of intimidating the governing authorities; only a part of those who advocate political assassination ever try to practice it.

Anarchism is generally weak where socialism is strong, and strong where socialism is weak. In the United States it had considerable vogue in the eighties and early nineties, especially under the leadership of John Most. During the last fifteen years it has had no appreciable influence outside of very narrow circles, in which Emma Goldman and Alexander Berkman may be named as the most prominent figures.

Experience shows that repressive measures tend to promote rather than to check anarchist activity. It has the least influence in those countries where civil rights are most secure, political liberties most widely extended, and the labor movement most vigorous.

Bibliography.—E. V. Zenker's *Anarchism: A Criticism and a History* gives a fair account of the theory and the movement. The socialist criticism of anarchism may be found in Marx's *The Misery of Philosophy* and Plechanoff's *Socialism and Anarchism.* The most important anarchist books are Proudhon's *What Is Property?* and *The Philosophy of Misery;* Stirner's *The Ego and His Own;* Bakunin's *God and the State;* Kropotkin's *The Conquest of Bread* and *Modern Science and Anarchism;* and Tucker's *Instead of a Book.*

LYNCH LAW

Boyd Fisher

The official record of lynching in the United States for 1911 will show close upon 75 killings or attempted killings. The continued prevalence of lynching gives dramatic emphasis to two facts about American life. In the first place, the white race, where it comes into frequent contact with the black, holds the negro unequal with it before the law, and wants the negro to know it. In the second place, the administration of criminal law in America is so lax that it is not trusted to mete out certain and speedy punishment for crimes that merit death.

One lynching in Tennessee in May illustrated both facts. A young negro who shot a negro servant, and, in self defense, killed her white employer who came to her rescue, was lynched by a mob which included men who

had been instrumental in getting him off with a year's imprisonment for a previous murder. On the former occasion he had killed simply one of his own race. When he killed a white man the matter took on a very different aspect. The very lightness of the punishment in the first place, however, goaded the lynchers to see to it that on this more serious occasion there was no easy escape. It is apparent that equal disrespect for the law was shown in the two cases.

Ninety per cent. of this year's lynchings occurred in the South and the usual victim was the negro. Only 35 per cent. of the killings were for the so-called "usual" crime. In most cases the desire was to impress the whole negro population of its limitations by a graphic form of punishment. In one Texas lynching the mob guarded the body of the victim for a day in order to give the negroes time to see it. In Florida six negroes were lynched on one day for suspected complicity in murder. A batch of nine negroes were killed in Tennessee for serving as strike breakers. The lynching at Coatesville, Pennsylvania, which was the only case of burning at the stake for the year, was the punishment for murdering a white policeman.

The year brought out its usual novelties and variations in the habit of lynching. Oklahoma lynched a woman and her sixteen year old son; Kansas youths tarred and feathered a girl for gossiping; Kentucky staged a thrilling drama when a negro who took refuge in a theatre was killed by a mob shooting from the auditorium. The lynching habit was acquired by the negroes themselves, who dealt summarily with a member of their race in Mississippi. In Mexico, too, a mob of Chinese made an example of one of their people. In Oklahoma, negroes captured a criminal black man to insure his receiving legal punishment, but a mob seized him, inflicting death themselves. In Georgia a victim escaped from the noose because the mob was too drunk to lynch him. This is suggestive of one cause of mob fury. The year brought out an increasing number of cases where mobs were cheated of their victims by prompt action of authorities. The governor of one Southern state, however, publicly condoned lynching, and in one case it was clearly shown that a judge of the criminal court could have prevented a lynching. One instance which demonstrated that lynching proceeded from impatience with the law was the lynching of three negroes in Georgia who had been in jail three months but not indicted.

Last year brought progress in one direction. Up to the past year no case of impressive punishment for participating in lynching has followed any of the 4,000 lynchings which have taken place in the United States in the last 25 years. Last year, however, brought punishment for a number of those who lynched a young detective in Newark, O., in 1910. Although one lyncher was acquitted and welcomed home with bands of music, three were imprisoned for long terms and six given indeterminate sentences. The Mayor of Newark, who was put out of office by the governor for dereliction in this case sought vindication in a reëlection this year but was badly defeated.

The Coatesville lynching, which shocked the country because the criminal had already been apprehended by the law and was chained to a bed in the hospital, showed that disrespect for the law is not confined to the South, but is a national trouble. In all northern states where lynchings have occurred, however, there have been scandals of corrupt voters and corrupt officials. No lynching has occurred where there is a tradition of effective criminal law, and where the people have confidence in their administrations.

Wherever the law takes cognizance of the negro's presumed special need of graphic and immediate punishment, lynchings are prevented. One Kentucky judge stopped talk of lynching a negro by calling a special term of court.

For many of the lynchings, undoubtedly, the press is partly responsible. The desire to be the first to publish clues and evidence which will apprehend a criminal leads often to the publication of unsubstantiated stories which focus popular wrath upon an innocent man.

XVI. LABOR AND LABOR LEGISLATION

THE LABOR MOVEMENT

CHARLES F. GETTEMY

THE SPIRIT OF UNREST

There is at the present time among the working population of the world a spirit of unrest, the origin of which undoubtedly lies in the world-wide spread of aspirations which increase the wants of the people. This movement has for its goal a larger share in the product of the common toil and a larger control of the conditions under which the working people live and labor—in short, a higher standard of living and better working conditions. By a strangely common impulse, which is as yet without international organization or even understanding, the industrial peoples of western Europe, of Australia and New Zealand, of America, and even the poor peasants of Russia are showing unmistakable signs of discontent. There has arisen a movement among these workers which seeks by a better adjustment of rates of wages to cost of living to share more largely the increasing wealth of the world and the better conditions of human life which they believe they are producing.

In response to this movement of the workers, numerous efforts are being put forth by governmental action to supplement wages insufficient to meet the emergencies of life. Schemes for insurance against accident, sickness, and unemployment, and systems of old-age pensions show that the first steps are being taken looking to the abolition of pauperism, if not poverty. And the governments of England and Australia are leading the way in a protest against employment at less than a living wage by establishing minimum wages scales in the lowest paid and sweated industries.

Movements for better housing and town planning show signs of growth both here and abroad. The town-planning exhibits at Düsseldorf and Berlin demonstrated the desire on the part of European cities to make over their municipalities to meet new needs and greater possibilities. Building associations, such as that in Frankfort, are providing attractive and comfortable homes at very cheap rental to thousands of workers. Town and city councils are providing new and improved dwellings in the place of old and unsanitary tenements. Garden city enterprises, such as Hampstead, Bourneville, Letchworth, and Port Sunlight have made great strides in England, where the co-partnership housing associations are so successful. America, with its new land, its half-grown cities, and its freer land tenure and laws promises an even more fertile field for this movement. In America, perhaps the most striking feature of the labor movement has been the awakening to the necessity for reform in dealing with the problem of industrial injuries resulting from work-accidents and diseases.

COST OF LIVING

Wholesale Prices in 1910.—All over the world wage earners are complaining that things are costing them more, that their wages do not go so far as they did, that their small comforts are being restricted. The report on wholesale prices by the Federal Bureau of Labor shows that

wholesale prices in 1910 reached the highest point in 21 years. As measured by the 257 commodities included in its investigation, they advanced 4 per cent. over the wholesale prices in 1909, and with this advance they were 1.6 per cent. above the high average of 1907, the year of highest prices within the period 1890 to 1910. (See also XIII, *Prices.*)

Prices in Canada.—The Canadian Department of Labor issued a report on "Wholesale Prices in Canada, 1890-1909," in which the general index numbers were made on such a basis as to be comparable with the United States Bureau of Labor series, which are in accord with the best scientific opinion. The report enumerates various elements which affect prices—variations in yields or harvests, improvements or other changes in methods of transportation, legislative enactments, such as tariffs, bounties, and excise duties, the operation of trusts, trade agreements, seasonal changes, changes in custom or fashion, increase in population, and other changes involving deferred productivity. Concerning the money side of price change the statement is made that "the part which gold plays as a direct vehicle of exchange dwindles into insignificance beside that of the credit system, which, though resting on a metallic basis, is not necessarily proportioned to metallic reserve, and the organization of which is therefore a most important factor in the modern financial world."

Senate Report on Wages and Prices.—Interesting reports have been issued as the result of governmental inquiries as to the causes of the recent increases in the cost of living, particularly those of the U. S. Senate Committee on Wages and Prices and the Massachusetts Commission on the Cost of Living. (See YEAR BOOK for 1910, p. 391.) The Senate report minimizes the effect of the tariff upon prices. Among the causes for the rise of prices are mentioned higher cost of production of farm products, increased demand for such products, shifting of population from food-producing to food-consuming occupations and localities, reduced fertility of land, increased banking facilities used for the holding of crops, reduced supplies convenient to transportation lines, cold storage systems, higher costs of distribution, industrial combinations, organizations of producers or dealers, advertising, increased money supply, over-capitalization, higher standards of living, and others. There is a significant discussion of the influences of the gold supply upon current prices. The report did not contend that the increase in gold was the dominant, or even a principal cause of the rise of prices, but that it undoubtedly had exerted a positive effect by cheapening the standard of price, and at the same time enormously increasing the amount of credit based on gold.

Government Control of Prices.—An interesting proposition was advanced by Attorney-General Wickersham and Judge Gary to the effect that the government, in order to control great aggregations of wealth, would find it advantageous and might find it absolutely necessary to exercise over industrial organizations the same power of regulation that it now exercises over inter-state railroads. Mr. Wickersham noted that since Congress had provided means for preventing discrimination and unreasonableness in the prices charged for interstate transportation, so it might establish a similar legislative rule with respect to the prices of commodities which are the subject of interstate commerce. He pointed out that when property is used in a manner to make it of public consequence and affects the community at large, it becomes clothed with a public use and may be controlled by the public for the common good.

HEALTH AND SAFETY

Phosphorus Poisoning.—An investigation of phosphorus necrosis in American match factories was inaugurated by the American Association for Labor Legislation and conducted by the United States Bureau of Labor. Agents of the government visited the match factories in 1909 and found many cases of the dread necrosis or "phossy jaw," which rots

the teeth and jawbones and requires mutilating operations. The report of the investigation, which was written by Dr. Andrews, secretary of the American Association for Labor Legislation, enlisted the interest of President Taft, who asked that a bill to stop the danger be prepared. The Diamond Match Co., however, owned in this country a patent that robs phosphorus of its dangers, and the passage of such an act, which appeared to give that company a monopoly control, met with strong opposition. The Diamond Co. then offered to license companies to use this harmless phosphorus sesquisulphide, but the original terms suggested were such that all the companies found it impossible to agree, although they were anxious to do away with the poisonous white phorphorus after the disclosures had enlightened the public of its dangers. These objections were finally met, however, and eight companies executed stipulations giving to them the right to use the patented process. The modified conditions, however, did not still the objections of all, and as a result the Diamond Co. transferred the legal title of its patent to the use of phosphorus sesquisulphide to three trustees: Prof. Edwin R. A. Seligman, of Columbia University; Charles P. Neill, United States Commissioner of Labor, and Jackson Ralston, an attorney for the American Federation of Labor. These trustees were given absolute power to fix terms which they believed to be fair, under which all match manufacturers who had not already arranged for licenses giving to them the right to use the non-poisonous substitute for white phosphorus, may acquire this privilege. As even this concession did not remove all the objections, the President wrote the trustees suggesting that the use of the patent be made free to all. This the Diamond Co. agreed to do, and forthwith gave up its title. This act marks the end of a long campaign, and it remains to be seen what further objections will be made to the Esch bill, which proposes to make all matches safe and to add the United States to the ranks of the nations which have joined hands in a world-wide fight against poisonous phosphorus.

Bureau of Mines.—The Federal Bureau of Mines signalized its recently specialized function by adding rescue cars to the equipment of rescue stations, and by continuing with increased efficiency the work of investigation and education formerly conducted by the technologic branch of the United States Geological Survey.

The New York Joint Board of Sanitary Control in the Cloak, Suit, and Skirt Industry.—The sanitary government of an industry by the industry itself is a new phase of constructive social work, and marks a new epoch in the labor movement in this country. The establishment of this board was the outcome of the great strike of garment workers in New York in 1910. On funds supplied jointly by the manufacturers and unions, a survey of work conditions was carried forward and the findings were presented to both parties to the labor contract as the basis of concerted action. The unions engaged in at least one "health strike" to remedy conditions in a plant which offended on every count in the investigation—in itself a way mark in trade history in New York. The Board of Sanitary Control was specifically created for the purpose of establishing and maintaining higher sanitary standards in the shops of the cloak-making industry. The total number of individual shops inspected was 1,243, the largest number being in Manhattan in the district south of 34th Street. As a result of these investigations a series of standards has been adopted by the Board. They constitute the first sanitary program legislated for jointly by the employers and employees in any industry in the United States, and in that respect mark an important step forward in the history of industrial relations in America.

Fire Prevention.—Immediately following a factory fire in Newark, N. J., in Nov., 1910, in which 25 employees were killed and injured, an investigation was undertaken which showed that the fire was identical with many others which have oc-

curred with periodical regularity, and which have to a greater or less extent the same attendant circumstances. Following the investigation, which showed among other things the ineffective character of existing laws and ordinances for the protection of life from factory fires, the common council of Newark revised its municipal building code and a new fire-prevention law was passed and signed by the governor on April 24.

A few months after this disastrous fire, 142 shirtwaist operatives, chiefly young girls, were killed in a factory fire in New York. The fire started on the eighth floor which, with the ninth and tenth, was occupied by the Triangle Waist Co., having some 600 employees, about 100 of whom were men. For lack of a fire drill, the employees did not have a prompt alarm and were not marched to the exits. About 100 bodies were found in a charred mass in front of the doors to the stairways and elevators, and about 40 jumped from the windows, falling 110 ft. with such force that some of them broke through iron gratings to the basement. A week after the fire, a mass meeting of citizens was held and a permanent Committee on Safety formed, whose influence was directed toward securing the passage of a bill providing for an official investigation by a state commission, going into the fundamental aspects of the situation. The creation of this commission may be expected to result in a more exhaustive study than has hitherto been made of the whole safety problem in omnibus factory buildings, of which the study of fire prevention is an example. (See also *Labor Legislation, infra*, and XI, *Fire and Fire Prevention.*)

The Red Cross Emergency Car.—The American Red Cross in January put upon the road a special Pullman car available for emergency work at disasters but designed chiefly as a traveling school to teach first-aid methods to workmen in dangerous trades. It has cooking, eating, and sleeping quarters for the staff and a room 26 ft. long which can be used as either an emergency hospital or lecture hall.

CHILD LABOR

Legislative Standards.—The movement for child-labor reform covers the broad field of child-labor legislation and its enforcement, and the constructive policies which seek to provide the child, excluded from prohibited industries, the physical, mental, and moral opportunities needed to develop efficient citizenship. In the field of legislation, certain standards are aimed at, which, briefly stated, are as follows: exclusion of children below the age of 14 years from the field of competitive industry; regulation of the employment of children between 14 and 21 years of age, in harmony with principles that conserve individual and social interests; and prohibition of night work for children under 16 years of age. (For a review of child-labor legislation during 1911 see *Labor Legislation, infra.*)

The Federal Children's Bureau.—After several years of agitation a bill was presented to Congress providing for the establishment of a Children's Bureau in the Department of Commerce and Labor. It is intended that this bureau shall investigate and report upon all matters pertaining to the welfare of children and child labor, especially the question of infant mortality, the birth rate, orphanage, juvenile courts, desertion, dangerous occupations, accidents and diseases of children, employment, legislation affecting children in the several states and territories, and such other facts as have a bearing upon the welfare of children. The bill as drawn and recommended for passage confines the operation of the bureau primarily to the question of investigation and of reporting the same, and is not designed to encroach upon the rights nor relieve the states from the duty of dealing with this subject.

Stage Children.—Through the activities of theatrical managers, the problem of child labor on the stage occupied an important place in the public mind, the most prominent activities being in Wisconsin, where the new law provides a license system for stage children under 16 and requires all under 14 to be constant-

ly accompanied by a guardian, and, in Illinois, where, after a heated campaign to repeal the present prohibition, the law was left unchanged. In Indiana children under 16 have been prohibited from employment on the stage. A plan of regulation somewhat similar to that in New York has been provided in the laws of Colorado.

LABOR ORGANIZATIONS

The American Federation of Labor held its 31st annual convention at Atlanta, Ga., in November. President Gompers' report declared for and said that organized labor demanded: the referendum, the initiative, and the recall; the passage of the so-called Wilson anti-injunction bill at the next session of Congress; restriction of immigration; further restriction of convict labor; legislation to relieve civil service employees from the executive orders prohibiting them to petition Congress; uniform laws for protection of life and health in factory buildings; a department of labor in the Federal government; and employers' liability and workmen's compensation acts throughout the states. Severe arraignment was made of so-called scientific management or efficiency systems. In scoring the so-called efficiency and scientific management systems, President Gompers declared as false statements that the systems had increased wages. He charged that the systems work undue hardship on the labor and result in no material gain.

The membership of the organization was never so great (1,750,000). According to Secretary Morrison's report, its financial condition was excellent. The treasury showed a balance of nearly $200,000 on hand. Nearly $5,000,000 was distributed in support of strikes by the various unions which are affiliated with the federation. During 1911 the federation issued 326 charters to unions, bringing the total of its organization membership to 1,464. In individual membership the federation gained nearly 200,000 during the year.

The convention defeated the resolution "respectfully requesting" its officers to resign from the Civic Federation. John Mitchell told the convention that it was a "packed" convention of the United Mine Workers at Columbus last Spring which had compelled him to give up his $6,000 position with the National Civic Federation.

The Building Trades Department reinstated the United Brotherhood of Carpenters and Joiners, which was suspended about a year ago. The department also concurred in the action of the federation declaring for amalgamation of the Steam Fitters and Plumbers' Unions.

The Bucks Stove and Range Co. Controversy.—As the result of a change in the administration of the affairs of the Bucks Stove and Range Co. of St. Louis, the prolonged, determined, and bitterly contested issue between this company and the American Federation of Labor came to an end. This apparently irrepressible conflict was found to be amenable to a settlement by the parties themselves, which is officially reported to have been "adjusted upon mutually honorable terms, satisfactory to all concerned." The company's attorneys were at once withdrawn from the case against the Federation pending before the United States Supreme Court, which thereupon threw it out of court as "a moot case." Minority stockholders sought to restrain the company and the Federation from carrying out their pact of peace under a claim for threefold damages of $750,000.

On May 15 the United States Supreme Court reversed on technical grounds the decision of two lower courts of the District of Columbia and ruled that Samuel Gompers, John Mitchell, and Frank Morrison, officers of the American Federation of Labor, had been erroneously sentenced to jail in the injunction proceedings growing out of the boycott of the company by the Federation. This decision does not mean, however, that these men were not guilty of contempt of court, nor does it mean that they may not be punished for it; it means simply that they may not, under the legal proceedings recently held, be punished by imprisonment. The Court pointed out that the proper method was for the

lower court to impose a fine for the benefit of the stove company.

Danbury Hatters' Case.—The United States Circuit Court of Appeals handed down a decision in the case of the Danbury hatters in April. This long drawn-out controversy began several years ago when a firm of hat manufacturers, D. E. Loewe & Co., of Danbury, Conn., by refusing to unionize their shop, incurred the hostility of the United Hatters of North America and the American Federation of Labor. Thereupon, the hatters called a strike and subsequently declared a boycott against this manufacturing concern. The boycott was in time extended to the company's customers, whereupon the boycotted manufacturers brought suit for damages. In the federal Circuit Court in Connecticut, where the case was tried before a jury, the judge directed the jury to find a verdict for the plaintiff, leaving to the jury as the "only question with which they could properly concern themselves" the amount of damages. The jury fixed the damages at $74,000. This amount the Court, acting in accordance with the provision of the federal anti-trust law, trebled. The Circuit Court of Appeals held that the lower court was in error in taking the matter out of the hands of the jury.

The action of the Court of Appeals in reversing the decision of the lower court and ordering a new trial of the case makes clear two important points. Judge Lacombe said that a boycott which prevents a manufacturer from making goods for interstate trade, or which prevents his customers in other states from selling or trying to purchase his articles, is an obstruction of commerce between the states, and, however it may be in common law or under the statutes of some particular state, it constitutes a violation of the federal anti-trust act; therefore, recovery can be obtained even "although the compelling motive of the combination was an effort to better the condition of the combiners which, except for the anti-trust act, might be proper and useful." The other point relates to the responsibility of the members of a trade union for the acts of the union's agents in carrying out the boycott. It is on this point that the higher court reversed the lower court's decision. The Court of Appeals held that the clause of the constitution of the United Hatters which provides that certain of its officers "shall use all the means in their power to bring such shops (i. e., non-union shops) into the trade" does not necessarily imply that these officers shall use other than lawful means to accomplish such object. The fact that an individual joins an association having such a clause in its constitution cannot be taken as expressing assent by him to the perpetration of arson or murder. Something more must be shown, as, for instance, that, with the knowledge of the members, unlawful means had been so frequently used, with the express or tacit approval of the association, that its agents were warranted in assuming that they might use such unlawful means in the future, that the association and its individual members would approve or tolerate such use whenever the end sought to be obtained might be best obtained thereby. The mere fact of membership in the union not being of itself sufficient to render the individual members responsible for the illegal acts of their agents, the question whether they had made themselves responsible by their express and tacit approval of such acts was one which should have been submitted to the jury. This decision redefines with great clearness what sort of combination by labor unions is illegal because in restraint of trade and refuses to hold members responsible for the illegal acts of their representatives.

The McNamara Case.—In Oct., 1910, the Los Angeles Times Building was destroyed by an explosion which resulted in the death of several men and the injury of many others, while on the same night bombs were found at the homes of the publisher of the *Times* and the secretary of the Merchants and Manufacturers' Association. A bitter controversy had long existed between the *Times* and the labor organizations of Los Angeles, and the

Times asserted that the explosion was the work of labor leaders or their sympathizers. William J. Burns, a detective, in May, 1911, brought about the arrest at Detroit and Indianapolis of three men charged with being involved in the destruction of the *Times* building. Mr. Burns declared that he had proof that the three men arrested (John J. McNamara, secretary of the International Association of Bridge and Structural Iron Workers; his brother, James B. McNamara; and Ortie McManigal) were not only directly concerned in the Los Angeles disaster, but in other dynamite explosions in various parts of the country. McManigal made a confession involving the others arrested, and also M. A. Schmidt and David Kaplan, who escaped arrest. McManigal told of the storing of dynamite in Tiffin, Ohio, and in Indianapolis, and it was found in the spots indicated. The three men were taken to Los Angeles on requisitions from the governor of California. Out of the arrest in Indiana of J. J. McNamara, a charge of kidnapping or illegal action arose. Mr. Burns, Mr. Ford (the Los Angeles assistant prosecuting attorney), and others were arrested in Indianapolis on the assertion that McNamara was not given a chance to procure counsel and take out *habeas corpus* writs, and that the police justice before whom McNamara was taken acted without jurisdiction. The Indianapolis Grand Jury began an investigation of the records and accounts of the International Association of Bridge and Structural Iron Workers in order to discover what sums were paid out by J. J. McNamara, and for what purpose.

The trial of the McNamara brothers began in October and on Dec. 1, James B. pleaded guilty to blowing up the *Times* building and John J. to having dynamited the Llewellyn Iron Works. On Dec. 5, James B. was sentenced to imprisonment for life and John J. for a term of 15 years. Bribery of jurors on behalf of the defendants was alleged by the district attorney of Los Angeles, who stated that a sum of $400 was actually paid into the hands of one of the sworn jurors to influence him to vote for acquittal, or at least for a disagreement, and that $3,000 more was promised at the end of the trial. Judge Bordwell issued a statement that the settlement of the case came about gradually from the accumulation of proof in the hands of the prosecution and immediately from the detection of the attempt to bribe one of the jurors. A conference was held Dec. 6 by government officials to determine the scope of the federal grand jury investigation and later the Department of Justice made definite announcement that the McNamara confessions of guilt would not cause the Federal government to relax its effort to bring to justice all persons who have been guilty of violating the Federal code relating to the interstate shipment of high explosives and the carrying of such explosives on passenger trains. District Attorney Miller at Indianapolis was instructed to go ahead with the grand jury investigation he had started in that city, regardless of the developments at Los Angeles. The Department stated that the grand jury will be expected to devote its time exclusively to the inquiry until all the evidence available shall be examined.

The National Erectors' Association, which employed Detective Burns in this case, charged that within three weeks after the open-shop policy had been declared by the association in 1908 there began an organized plan of dynamiting. Since Jan. 1, 1908, there have been over 50 attempts to dynamite the factories or jobs of members. The association declared that their investigation would be continued to the prosecution of the men who paid the McNamaras and who countenanced and instituted these outrages. The books and papers of the Standard Iron Workers' Association in the vaults of a bank in Indianapolis were seized by the Federal authorities as were those of the Salt Lake City local union.

Detective Burns declared that he had already the names of the "higher-up" men implicated, and asserted that President Gompers had known for some time that the McNamaras were guilty. Mr. Gompers vigorously denied this charge and asserted that the pleas of the two brothers came as a great surprise and shock

to him, he having held the belief that they were innocent.

An official statement was issued by the McNamara Ways and Means Committee of the American Federation of Labor which held a two days' conference at Washington, in which James B. and John J. McNamara were declared recreant to the good name and high ideals of organized labor and which expressed satisfaction that the culprits had been punished for their crime. It also condemned the McNamaras for their inhumanity and declared that organized labor should not be held either legally or morally responsible for the crimes of an individual member, and that they would welcome any investigation which either federal or state courts might undertake.

CONCILIATION

The value of having some recognized legal means of settling labor disputes is demonstrated every time the Erdman act of Congress is even held in reserve. In the latter part of 1910, the managers' committee and officers representing the Brotherhood of Locomotive Engineers, had been for several weeks in a deadlock, and after a vote on a referendum ballot, 97.5 per cent. of 32,780 locomotive engineers voted to strike. The mediation of United States Commissioner of Labor Neill was then invoked, with a view of falling back upon arbitration in accordance with the Erdman act if this conciliation failed. By gaining some minor concessions from both sides, Commissioner Neill was able to secure the agreement of each to an advance of wages of 10.33 per cent. This increase ranged from 8.5 to 14.5 per cent., according to different schedules of work and added about $4,000,000 to the payroll of the railroads; it will be the basis of a working agreement continuing several years. The magnitude of the loss saved by averting the threatened interruption of business may be imagined when it is considered that 61 western railroads, representing 53 per cent. of the entire railroad mileage of the United States, were involved. The differences between the managers and the Brotherhood of Railroad Trainmen and the Order of Railway Conductors were settled by a 10 per cent. wage increase for 75,000 conductors and trainmen on 51 western roads—a total of $5,000,000. This marks the culmination of the general wage movement begun by railway employees more than a year ago.

STRIKES AND LOCKOUTS

The industrial and social progress of a community is dependent upon the healthy ambition of its workmen to improve their efficiency and to advance their position in life. Workmen cannot be blamed for expressing their dissatisfaction with oppressive conditions by striking, as a last resort, unless provisions are made for proper official courts of investigation which will tend to secure justice without strikes. Attempts should be made to arrange peacefully for improved conditions while work continues. Failing in this, the next move should be an appeal for arbitration. Arbitration by an impartial tribunal is more apt to establish just conditions than will be established by the strike itself. The public who suffer, especially through strikes affecting public utilities, have a right to expect reasonable efforts to prevent the discomfort and loss consequent to strikes and lockouts in railroad, express, street railway, gas, electric light, and telephone and telegraph industries.

The expressmen's strike in New York in Oct., 1910, besides causing interruption to business inflicted inconvenience, loss, and sometimes danger upon many citizens. The strike originated with the helpers, mostly boys and young men, who acompany the express wagons on their routes. Not all the express companies were concerned at first and there was doubtless a difference in the degree of fairness with which the different companies treated their men. The strike soon extended to the drivers of the wagons, who were under bonds and refused to take the responsibility of going out without proper assistants; later it became a

sympathetic strike extending to employees of all express companies. The original strikers declared that they received very inadequate wages, and that their hours of work were excessive; it was admitted by at least one company that these men sometimes worked 12, 13, 14, and 15 hours a day. The strike spread from the express helpers and drivers to the employees of taxicab companies, coal companies, and other concerns engaged in transportation. In the negotiations between the strikers and the employing companies there was nothing like a clear understanding on either side as to what the other demanded and what it would yield. As it was, largely through the efforts of Mayor Gaynor (who saw that the points really in dispute were simple and capable of adjustment), the representatives of the companies and of the strikers agreed later that questions of hours and wages should be considered with committees of the employees and a fair settlement be reached; that employees on strike should be taken back without regard to the question of their having joined a union, but that none who had done or incited acts of violence should be taken back; and on this simple and just agreement the leaders of the express company strikers recommended that the employees return to work. The strike was finally settled in December, by granting the men the 11-hour day, $50 a month minimum wages for helpers, and an increase of about $5 a month for all other classes of workers up to those receiving $75 or over a month. For overtime, helpers will receive from 17 to 20 cents an hour, drivers and platform men from 25 to 27 cents. Five holidays with pay were promised and promotion is to be made according to seniority.

The strike of Chicago garment workers came to an end in February. Approximately 35,000 wage-earners, with 100,000 people dependent upon their earnings, were idle for 19 weeks in the hope of forcing their employers to remedy certain conditions in the workshops which seemed to them intolerable. The grievances were summed up under the headings overwork, underpay, and unfair exactions, and it was pointed out that these grievances, popularly supposed to be confined to the sweatshop, were prevalent in the highly organized factories maintained by merchant tailors. The girls were the first to strike, but they were soon joined by the only organized branch of the force, the cutters and trimmers, who were, without exception, men. Among so large a number of strikers, divided into more or less antagonistic groups by differences of language, race, and religion, some confusion as to means to be used and aims to be attained was inevitable. Hart, Schaffner & Marx, the firm in whose shops the strike originated, agreed in the early weeks of the strike, to arbitrate the grievances complained of by their employees, but they expressly ruled out of consideration the recognition of a labor union or even of a shop committee. This proposition the workers rejected unanimously, saying that without such a guarantee of future adjustment the same desperate battle would have to be fought over again in the near future. Finally, on Jan. 14, this leading firm agreed with the strikers (about 10,000) upon the arbitration of all questions in dispute without any reservations, and the open shop. Meantime, the two employers' organizations, the Wholesale Clothiers' Association and the National Tailors' Association, refused to treat with their employees (about 20,000) except as individuals. Even when the committee appointed by the state senate to investigate the causes of the strike and devise some means of bringing it to a close secured evidence of the maintenance of a blacklist by the employment bureau patronized by the Association houses, and made clear that the primary object of their organization was to control the labor supply, these organized employers insisted that nothing would induce them to have any dealings with organized labor. The strikers then returned to work unconditionally on whatever terms their employers would offer, literally forced into submission by the impossibility of continuing longer the bitter struggle against hunger and

cold, but with the full determination to renew the fight when their union had accumulated sufficient funds.

The Westmoreland Strike.—After 16 months, during which their strike was kept up in the heat of summer and cold of hillside camps in winter, the strikers in the Irwin-Greensburg field of Western Pennsylvania returned to work. The executive board of the United Mine Workers on June 27 voted that there were no longer funds to continue sending $20,000 each week to Greensburg. Following this action, a meeting of leaders was held in Greensburg and the strike was declared off on July 5. No demands were made and no concessions were offered regarding any of the issues for which the struggle had been kept up for over a year. These on the one hand had related to check weighmen, wages, hours, payment for dead work, and other reforms in the everyday dealings of the workmen with their employers, which to their minds would put them on an equal footing with the neighboring Pittsburgh district; and on the other hand, had related to recognition of the union.

Strike of New York Street Cleaning Department Employees.—In November some 1,150 ash and garbage collectors in the employ of the City Street Cleaning Department struck against the collection of garbage at night and for a return to the former system of day collection. They also complained of being compelled to work nine hours a day instead of eight, as the law prescribes, of being subjected to petty annoyances and graft at the hands of the district boss or foreman, and of objectionable rules and regulations. This open conflict between the interest of the whole people and the private concern of a single class of public servants, brought to the public notice the glaring lack of machinery to adjust and avert contentions in the public service without putting the community in jeopardy.

The failure to remove the garbage resulted in the piling up of great masses of filth in the streets and backyards, especially in the poorer and more thickly populated sections of the city, since the strikers did their best to prevent others from removing the garbage. Mayor Gaynor refused to arbitrate and declared that the strikers had forfeited their civil service rights and would not be taken back, and that their places would be filled by other men on the civil service lists. The Department called for 5,000 strike breakers and, in spite of the police protection afforded them, several riots occurred in which a few of the strike breakers were killed and many were wounded. The violence appears to have been caused principally by organized mobs of irresponsible street loafers who threw missiles from the tops of houses and were thus able to escape from the police. It is a lamentable fact that many of the employees were misled into throwing up good positions through the fault of the leaders who deluded the men into the belief that government is like private business.

SCIENTIFIC MANAGEMENT

In the new movement for "scientific management" three parties are directly concerned—the employer, the employee, and the efficiency expert. (See XXXII, *Industrial Management.*) The efficiency expert views the subject of production from a scientific standpoint, quite apart from the manner in which the question is considered by the employer and employee, in an endeavor to perfect the machinery of production so that industrial waste may be reduced to a minimum. It is his task to overcome any obvious friction which may be discovered and to devise methods of rewarding or penalizing the worker in order to stimulate greater energy. This viewpoint of the industrial engineer is more comprehensive, because more disinterested, than that of either employer or employee, yet it has the obvious fault of isolating his composite industrial problem from the problems of other equally vital social questions.

Organized labor holds that the principles of trade unionism are diametrically opposed to the movement for scientific management, because the employees who perform the actual manual labor of production are

denied any voice in the working out of the plan. A jealous regard for his achievement of collective bargaining lies at the bottom of the trade unionist's antipathy to the new program of scientific efficiency, and for this reason it is possible that the reformers will not be able to eliminate so much of the industrial friction as they hope. It is manifest that while they may devise the methods, it is the employers who will apply them and who may be easily tempted into perverting them to their own profit and to the disadvantage of the working class.

EMPLOYERS' ASSOCIATIONS

The National Association of Manufacturers has taken many long steps forward of late in safeguarding the health, lives, and limbs of their employees. This year, particularly, a large part of their sessions were devoted to the findings of the committees on fire prevention; on ventilation, heating, and lighting; and on industrial indemnity insurance. The reports of the first two committees were preliminary. The one on industrial indemnity insurance was the result of a careful study of foreign systems by Ferd. C. Schwedtman and James A. Emery. The committee on ventilation, heating, and lighting advocated such methods of ventilation as will give low humidity and a constant circulation of air, the installing of electric exhaust fans, the saw-tooth instead of the flat-roof construction, the drawing off of poisonous fumes, and the adoption of scientific methods of lighting. The following resolutions presented by the committee on industrial indemnity insurance were adopted at the annual meeting: (1) all legislation must be for compensation; (2) compensation legislation must cover every wage worker; (3) compensation must be assured; (4) compensation must be efficient; (5) employer and employee are jointly responsible for all unpreventable accidents and should therefore jointly meet the compensation expenditures; (6) every injury except those due to criminal carelessness or drunkenness on the part of the worker should be compensated; (7) humanity and efficiency demand that prevention of accidents is made of prime importance; (8) since the progressive individual usually provides voluntarily for reasonable accident compensation, it is right that the reactionary or selfish individual be compelled to do likewise, through universal compulsory insurance; (9) to prevent unfair competition between employers in different localities, it is necessary that compensation laws of the various states be reasonably uniform; (10) single liability is essential for reasons of efficiency and equity. Resolutions were also passed, recommending the appointment of a new committee on industrial indemnity insurance to continue the study and promotion of industrial insurance.

The National Metal Trades Association at its annual convention in New York devoted one session to the discussion of accident compensation. The committee recommended an elective law similar to that recently passed in New Jersey, and a provision allowing voluntary agreements between employer and employee to be substituted if these agreements were equally favorable. The Association passed resolutions approving a system of compensation, appropriating funds both for carrying on the work of the committee and for establishing a system of inspection for the prevention of accidents, and urging a petition to Congress that 1912 be the year for the International Congress on Social Insurance, which is to hold its next meeting in this country. The committee on employers' liability insurance drafted a bill embodying the underlying principle that the employer should have the right to elect the method of determining compensation.

WELFARE WORK

The Dennison Manufacturing Company, whose plant is located at Framingham, Mass., devised and put into operation in December a novel plan of industrial partnership, which, while guarding the rights of capital as represented by the stockholders of the old company, who now become

holders of the first preferred stock of the new company, will, it is expected, serve to stimulate every employee to renewed and continued exertions further to develop this establishment. The company was reincorporated and the stock increased from $2,500,000 to $4,500,000. About 180 of the principal employees will immediately share in the earnings and others will participate in profits later.

Principal employees are those whose aggregate service shall amount, at the end of the calendar year for which the apportionment is made, to the time set forth below, and whose remuneration actually received during such calendar year (but not counting remuneration paid for overtime work, piece work, or commissions), shall have been as set forth below, and which rate of remuneration in this company shall have been approved by a two-thirds vote of all the directors, namely: at least seven years' service and remuneration of at least $1,200; or at least six years' service and remuneration of at least $1,500; or at least five years' service and remuneration of at least $1,800; and who shall have contracted in writing with this company for extra remuneration.

The company believes that the benefits of the new system will go not merely to those who are for the time principal employees, but will extend through the entire organization. Every man already entitled to become a "principal employee," including every salaried officer, has worked up from the ranks and it is and will be open to every employee to attain to the position which will entitle him to become a principal employee.

The Edison Electric Illuminating Company of Brooklyn in 1911 adopted a plan of profit-sharing. A fund was set aside out of the profits of 1910, and a portion credited to each employee who had worked for the company two years or more. This fund is to be paid in cash to the trustees, consisting of three officers of the company, and two employees selected by the subscribers. The trustees are responsible for the funds, but have nothing to do with the distribution of the profits. That is attended to by a "provident committee," made up of the three officers of the company and two members of the board of directors. After three years an employee may, if he has won the favor of the provident committee, draw out stock equal in value to the sum credited to him during the first two years. If an employee wishes to purchase a home, or if he dies, or if some other unusual necessity exists, the committee may, in its discretion, allow the credit to be withdrawn in less than three years. This plan prevents the admission of employees as partners by excluding the employees from the provident committee and by putting into the hands of that committee control of the distribution of profits.

The Morgan Construction Co., of Worcester, Mass., introduced an "industrial accident relief" plan modeled after that of the American Steel and Wire Co., but differing in certain particulars. The period after an accident in which no relief is paid is shortened to five days, as compared with the 10 days of the American Steel and Wire Co. and other constituent companies of the United States Steel Corporation.

National Electric Light Association.—This organization, representing about 9,000 employers, who hire some 600,000 men, decided to adopt the plan of charging off the cost of industrial accidents to the industry as a whole; to encourage mutual sickness insurance funds among employees; to provide service annuities for employees 65 years of age and 10 years in their employment; to inaugurate systems of profit sharing as a result of which every worker from office boy to president may become a partner instead of an employee; to introduce savings and investment funds; and to popularize low-cost life insurance.

American Iron and Steel Institute.—One of the purposes of this institute is "to enable members to cooperate along certain lines of welfare work which seemed more likely to be well done through conference and coöperation than through individual effort." A committee

representing leading steel companies was appointed to consider the question of the elimination of all unnecessary Sunday work, a compulsory six-day week for the men, and the abolishment of the long shift (24 hours) in continuous operations, and has submitted its report, which is now in the hands of all large iron and steel producers who have this problem to face. Steps were also taken to deal with the improvement of employment conditions of a more general nature. A committee on welfare work was appointed which has employed an expert to examine personally the health conditions at plants and report to the committee.

HOUSING

Housing Reform by Savings Bank.—The Worcester (Mass.) County Institution for Savings gave notice to persons desirous of making building loans that the bank would not encourage the further development of the "three-decker," or three-family, frame tenement houses. The bank will refuse to lend money on such houses and will encourage loans on single dwellings. If similar action were taken by savings banks generally, it would mean nothing short of a revolution in the housing development of small and medium-sized cities.

Massachusetts Homestead Commission.—A commission is now at work in Massachusetts, consisting of the director of the Bureau of Statistics, the bank commissioner, the president of the Agricultural College, a member of the State Board of Health, and three others appointed by the governor under an act of the last legislature, studying the subject of homesteads for workingmen. A former commission which sat two or three years ago, after investigating the subject, made a report which resulted in no action, and the legislature of 1911, after further consideration, provided for the establishment of the present commission under a mandate to perform the single duty of reporting to the next legislature "a bill or bills embodying a plan and the method of carrying it out whereby, with the assistance of the Commonwealth, homesteads or small houses and plots of ground may be acquired by mechanics, factory employees, laborers, and others in the suburbs of cities and towns." In November the commission was engaged in drawing such a bill, the tentative form of which gives authority to the state treasurer to loan certain funds in the treasury to the commission for the purpose of buying land for the development of the scheme. (See also XI, *Congestion and Housing.*)

SAVINGS BANK INSURANCE

Three savings banks in Massachusetts have established such insurance departments—the Whitman Savings Bank, the People's Savings Bank in Brockton, and the Berkshire County Savings Bank in Pittsfield. Fifteen other banks in the state have agencies for these three. The number of policies issued up to Nov. 30 last, was 5,505, representing insurance amounting to $2,032,874, and annuities amounting to $25,514. This business has been built up within three years. One notable aspect of the savings bank insurance experiment is the effect on the industrial insurance companies. The latter have been forced by the new competition to cheapen and improve their insurance. The rates of these companies have been reduced 20 per cent., which means a saving to the industrial policy holders of Massachusetts of about $1,500,000 annually. Moreover, in order to give old policy holders the benefit of the cheapened insurance, the companies have declared bonuses on all policies that have been in force a number of years. Another improvement has been the increase of the amount payable on the death of the insured within the first year after the policy is written. One company is now paying the full amount upon certain forms of policies in the case of the death of the insured at any time. The companies have also liberalized the policy forms and are giving better advantages in the way of extended insurance and cash-surrender values. In general, the companies, while still earning big profits, are

dealing more liberally with their policy-holders. These three banks have, under the law, established a great many depositories (130, mostly in shops or factories), where people of small means may conveniently hand in the sums to be applied to life insurance.

CREDIT UNIONS

The purpose of the credit unions, authorized by the laws of Massachusetts, is to help people to save, and to assist those in need of financial help whose credit may not be established at the larger banks. Such associations exist in nearly all the European countries, in Canada, Egypt, India, and many other British colonies, but it is in Germany and Italy that they have reached their greatest development. The first credit union was organized in Italy in 1848. In all countries certain fundamental principles are adhered to. The first is that the union shall be organized on a coöperative basis. The second is that the association shall be of persons and not of shares. Further, a limit is set on the number of shares a person may hold or the amount of his deposit. A third rule is that loans shall be made only for purposes which promise to result in a saving or profit to the borrower. As loans are made only to members and any member may become a borrower, care must be taken to admit to membership only men and women of honesty and industry. It is therefore necessary to have a personal knowledge of the character of the members and this naturally restricts membership to a small community, a small subdivision of a large city, or to a small group or organization of individuals. The Italian consul in Boston has organized a union for the benefit of his countrymen, and the Boston Women's Educational and Industrial Union has established one in connection with its law and thrift department.

MINIMUM WAGE BOARDS

The select committee on home work of the British House of Commons reported in 1908 that it was quite as legitimate to establish by legislation a minimum standard of remuneration as it was to establish such a standard of sanitation, cleanliness, ventilation, air-space, and hours of work, and that wage boards were workable and practicable, and would be beneficial, and ought to be tried. The British government accepted the advice of its committee and inaugurated the policy of a legal minimum wage with the trades board act of 1909. The British statute served as a model for the Minnesota minimum-wage bill of 1911, subject to the modifications thought necessary to escape the ban of American courts. The measure was intended to apply only to women and minors, but it failed to pass. The Wisconsin bill, which also failed of enactment, was a distinctively American product and offered the promise of a mode of determining wages under the authority of law that would be workable and practicable even under peculiar American conditions. The Massachusetts legislature established a commission to study the question of wages of women and minors and to report on the advisability "of establishing a board or boards to which shall be referred inquiries as to the need and feasibility of fixing minimum rates of wages for women or minors in any industry."

Paul U. Kellogg has proposed a novel plan for a federal minimum wage applicable to all aliens employed by corporations. This argument was that the surplus of immigrant labor, more than anything else, depresses living conditions to levels which would never be known were the employing corporations seriously confronted with the business of attracting to their doors workmen self-resourceful to make choices; that immigration has blocked comprehensive trade-union activity to raise the rate paid common labor in the United States. He therefore suggested a channel through which the situation might be controlled, namely, by applying minimum wage standards directly and solely to the currents of immigration; or, in other words, to provide that until an immigrant has spent five years in America he cannot be hired for less than a living

wage, say, for purposes of discussion, $2.50 a day.

UNEMPLOYMENT

Report on Unemployed and Lack of Farm Labor.—The New York State Commission's sub-committee on unemployment and the lack of farm labor found evidences of unemployment in good times as in bad. Three causes of unemployment were presented: seasonal trades; the cyclical character of industry, illustrated by the panic year of 1908; irregular variations in employment due to new processes and inventions; immigration, especially in New York State, where one-third of the 750,000 immigrants landing in New York City in 1909-1910 declared that state their destination. In certain industries a further cause of unemployment is the transient nature of the work. In longshoring, for instance, it is estimated that on no day is more than half the available labor supply employed.

Statistics of Unemployment.—Comprehensive statistics on the subject of industrial unemployment in the United States, or even partial statistics as would justify general deductions, are not available. The Federal Bureau of Labor has not dealt with this branch of labor statistics and only two state bureaus (New York and Massachusetts) publish periodical returns of trade-union unemployment in any way analogous to those collected by the labor departments of European countries. (See also XXIV, *Manufactures.*)

The statistics of trade-union unemployment in New York show the following percentages of members idle on account of lack of work or material: Dec. 31, 1910, 25.6 per cent.; March 31, 1911, 16.9 per cent.; June 30, 1911, 19.4 per cent.; while the percentages unemployed in Massachusetts were: Dec. 31, 1910, 7.3 per cent.; March 31, 1910, 7.5 per cent.; June 30, 1911, 4.2 per cent.; and Sept. 30, 1911, 3.4 per cent. The use of these figures for interstate comparison is objectionable, because of the disproportionate manner in which the various industries are represented in the statistics for the two states.

CONFERENCES AND CONVENTIONS

The American Academy of Political and Social Science held its 15th annual meeting at Philadelphia, in April, 1911. The chief topic of discussion was the subject of work risks in modern industry. The other subjects covered in the two days' conference were prevention, illustrated by an exhibit of safety devices; liability and compensation, and state insurance, the latter broadening into the topic of social insurance in all its aspects.

The American Association for Labor Legislation held its 4th annual meeting at St. Louis, in Dec., 1910. This association was responsible for the investigation of phosphorus poisoning in the match industry in coöperation with the Federal Bureau of Labor and the first national conference on industrial diseases. An important conference was held at Chicago in Sept., 1911, under the auspices of this association. Leading experts representing the various state departments interested in factory inspection and the efficient administration of the labor law, as well as safety engineers and statisticians from the principal liability insurance companies, met with representatives of manufacturers and employees and discussed definite standards for the prevention of industrial accidents, the uniform reporting of industrial injuries, and the possibilities of administration by commission.

The National Child Labor Committee held its 7th annual meeting at Birmingham, Ala., in March, 1911. Among the subjects considered were: Uniformity in child-labor legislation, child labor in streets and public places, poverty and parental dependence in relation to child-labor reform, child labor on the stage, conservation of childhood, and a legislative program for the South.

The National Association for the Conservation of Vision was organized to aid in: (1) The prevention of infantile blindness; (2) prevention of blindness from industrial and other accidents and from diseases; and (3) conservation of vision

through improved hygiene during school life and in industry. The association invites the coöperation of all societies interested in the blind, in social purity, and sex education, in preventing infant mortality, in safeguarding industrial occupations, and all medical, educational, commercial, and labor bodies, women's clubs, and organizations dealing with social and economic questions. It will become a clearing house for the conservation of eyesight.

The International Associations of Factory Inspectors and Officials of Bureaus of Labor held their annual conventions at Lincoln, Nebraska, in Sept., 1911.

National Conference on Housing in America.—Lawrence Veiller submitted to the first conference a housing program suitable for any community. This consisted of the forming of a citizens' committee which, as a preliminary, should undertake an investigation of housing conditions, followed by a campaign for legislation, the committee constituting itself the permanent guardian of the law when secured. He held that the essential features of a successful movement for good housing were: (1) A knowledge of social conditions; (2) an educational campaign among landlords and tenants, and (3) a course of training designed to raise the standard not only of inspectors but of janitors.

The National Civic Federation held its 11th annual meeting at New York in January. The chief topic of discussion was that of uniform state legislation on certain subjects and extension of scope of federal legislation on others. In place of the Sherman anti-trust law several advocated a federal license or incorporation of trusts and their regulation by a commission with powers such as that established by the Canadian combines act of May, 1910. Industrial efficiency was discussed by industrial engineers and labor leaders. Conciliation and arbitration was discussed. The efficacy of the Erdman act was acknowledged, but conflicting opinions were expressed as to the advantages of advocating state legislation modeled after Canadian law.

The Women's Trade Union League held its third biennial convention at Boston, in June. There were 78 regularly accredited delegates from seven local leagues, and one from the society in Germany, which has a membership of 30,000 women. The delegates represented, through affiliated trade-union organizations, about 45,000 women in 26 different trades. There are now nine local leagues in Chicago, New York, Boston, St. Louis, Springfield, Ill., Cleveland, Baltimore, Kansas City, and Denver. Reports from local leagues showed a development which placed the movement representing the trade union organization of women on a footing with the other well established social movements of the country. The Chicago and New York reports showed the activities of the league in the three great general strikes in the clothing trades which had occurred during the preceding year and a half.

THE LABOR MOVEMENT ABROAD

British Scheme of State Insurance.—This scheme covers that part of the working population whose yearly income does not exceed $780. The proposed weekly state contribution is five shillings a week and all benefits beyond this limit shall come from purely voluntary membership in the benefit societies. Persons between 16 and 70 years of age are eligible, all beyond this age passing into the class of old-age pensioners. Half the contribution toward the fund is to come from the insured, half from the state, the amount to be calculated by government actuaries. The most distinctively social element in the plan is, indeed, the development of the system of free hospitals and free medical treatment in the home, by which the state will undertake, or at least share, the financial support of those with frail constitutions, or those whose constitutions have been undermined by unhealthful occupations. The boards of administration are to be made up of representatives of the government, of the friendly societies, and of employers of labor; the beneficiaries, except those who are members of the friendly societies, will not be represented. The insurance bill is en-

countering little opposition in principle, which is in part due to the contributory character of the fund, and its administration by two non-partisan bodies, the friendly societies and the national labor exchanges, which takes away the charge of discrimination by the government in favor of a certain class. The administration of the funds through the machinery of established bodies again serves to reduce the expense to a minimum, as the only new body of officials that will be needed is an insurance board. The work of the friendly societies will, of course, be increased, and a greater number, as well as a higher grade of physicians, will be needed for the invalidity insurance. On Dec. 6 this bill passed its final stage in the House of Commons and was promptly introduced in the House of Lords, where it passed its third reading Dec. 15.

German State Insurance.—The statistics of the German industrial insurance system for 1909 show that out of a population of 63,000,000, 13,385,000 were insured against sickness, 23,767,000 against the consequences of accident, 15,500,000 against invalidity and old age; 5,500,000 cases of sickenss, lasting 111,000,000 days, were cared for by the sick funds. The employers' accident insurance organizations paid damages to over 1,000,000 persons, of whom 139,000 were new cases and 993,000 temporarily or permanently disabled. Pensions were given to 119,000 persons over seventy. Employers contributed $103,000,000, the working people over $85,000,000. The state's appropriations amounted to $12,000,000. The sick funds spent $84,000,000; the accident insurance, $40,000,000; the invalidity insurance, over $45,000,000. The whole amount spent reached, in 1909, more than $170,000,000.

International Labor Legislation.—Germany, Austria, Hungary, Belgium, France and some dependencies, the United Kingdom and some dependencies, Italy, Luxemburg, The Netherlands, Portugal, Sweden, and Switzerland, have agreed to accept the convention drawn up at Basel, in Sept., 1906, providing that within two years after ratification of this convention by any nation work for women in that nation shall be prohibited between 10 p. m. and 5 a. m., to take effect in Jan., 1912. At the same time the convention of 1906 prohibiting the use of poisonous phosphorus in matches will come into force in Germany, Denmark, Luxemburg, Switzerland, France, and The Netherlands, with several dependencies of the last two countries. In some of these countries this regulation is already in force. The United Kingdom has agreed to adhere to the convention after Dec., 1913, Spain after Oct., 1914, and Italy after June, 1915.

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LABOR LEGISLATION

IRENE OSGOOD ANDREWS

ADMINISTRATION OF LABOR LAWS

Wisconsin Industrial Commission.—The most important administrative measure, and perhaps the most significant labor law of the year, was the act creating the Wisconsin Industrial Commission. This is the first thoroughgoing attempt to provide for the establishment through state authority of definite occupational standards of safety and at the same time to give our labor law greater elasticity through the work of experts clothed with the power of issuing orders.

The commission is composed of

three men, at salaries of $5,000 each and necessary expenses, with power to employ experts and other members of its staff and to fix their compensation; it administers all the labor laws of the state, including those relating to workmen's compensation, employment agencies, trade disputes, child and woman labor, and truancy. The law covers "every place of employment" except agriculture and domestic service where mechanical power is not used, and covers all persons "directly or indirectly employed by another for direct or indirect gain or profit." The commission is authorized to establish "safe" conditions in industry, a term which is defined to mean "such freedom from danger to the life, health, or safety of employees or frequenters as the nature of the employment will reasonably permit"; it must also protect the "welfare" of employees, defined as "comfort, decency and moral well-being." In order to accomplish these results the commission has power to make investigations and to issue either general or special orders for the protection of employees.

The administration of the act is so arranged as to deprive the inspectors of any discretion over the reasonableness or suitableness of any required protection. The commission alone issues orders, but the employer may appeal directly to the commission itself, which is required to give a public hearing. Appeals may be taken to the Supreme Court. If any new information is here presented the case must revert to the commission for decision before final settlement. No injunction to set aside an order can be issued before an application has been made for a hearing as provided in the law. In trade disputes the commission is given broad powers, and it may appoint and provide for the expenses of temporary boards of arbitration.

Bureaus of Labor.—In the administration of labor laws by the existing bureaus of labor, two tendencies in legislation are noticeable. The first is toward specialization within departments and is illustrated by the employment of a physician in Illinois and by the appointment of an inspector of safety devices in Texas. The second is toward strengthening the provisions for the enforcement of laws by increasing the penalties for violations, as in New York, Ohio and Michigan. In several states inspection bureaus or departments have been reorganized with a view to placing them upon a more efficient footing.

In New York the Department of Labor has been reorganized with several important changes. The total number of inspectors is increased from 60 to 85, 15 of whom, instead of ten as before, must be women. Inspectors are now divided into five instead of three grades, but no further appointments are to be made to the first grade (salary $1,000 a year) which is to be eliminated; the second grade consists of not more than 50 inspectors at $1,200; the third of not more than 30 at $1,500; the fourth of not more than eight at $2,500; and the fifth consists of one person at $3,500, who must be a mechanical engineer.

In several other states the number of inspectors and the appropriations for expenses have been increased. Georgia has created a Department of Commerce and Labor, and New Jersey has placed its factory inspection department under the civil-service law.

CHILD LABOR

The year 1911 has been one of remarkable progress in legislation to prevent and limit child labor in the United States. No previous year has equalled this either in the total number of acts relating to child labor or in the aggregate number of states affected. Probably also there have been more thoroughgoing revisions and more important gains than in any previous year. Among the 41 states which held legislative sessions in 1911, including Vermont, whose session began in 1910, 30 enacted child-labor laws, and 59 bills bearing on child labor (some of them compulsory-education bills) were passed. The following ten states reënacted the entire child-labor law, reaching in every case a higher standard and in most cases making marked pro-

gress: Colorado, Michigan, Missouri, New Hampshire, Tennessee, Texas, Utah, Vermont, West Virginia and Wisconsin. Four other states, California, Indiana, Oregon and South Carolina—enacted laws considerably increasing their protection to children. (See also XXVI, *Education.*)

Charles L. Chute, of the National Child Labor Committee, says:

> The most marked gains are in the following provisions: (1) extension of the 14-year minimum age limit to new occupations: this is effected in nine states; (2) prohibition of all work during the school term or during school hours: this is effected in five states for the first time. In addition, two states —California and Oregon—have fixed a 15-year age limit for employment during school hours. Compulsory school-attendance laws are strengthened in a number of states, the age being extended to 16 and in Idaho to 18 except in cases of necessity and of completion of the elementary school course.

In Wisconsin it is provided that wherever evening, continuation, industrial or commercial schools are established by cities or towns, children from 14 to 16 must attend not less than five hours per week for six months. Employers must reduce the hours of such children not less than the number of hours which they must attend these schools. Illiterate minors over 14 may not be employed where there are such schools unless in attendance upon them, and they must furnish their employer weekly with a written report of attendance.

Prohibition from Dangerous Occupations.—Prohibition of children from numerous dangerous occupations is a marked feature of this year's advance. Nine states have excluded children under 16 from the occupations enumerated in more or less extended lists. These include mines in Colorado, Pennsylvania and Tennessee. Texas has fixed a 17 and Wisconsin an 18-year age limit for work in mines and quarries. In Connecticut a typical law of the better class provides that:

> No child under 16 years of age may be employed or permitted to work in operating or assisting in operating any of the following machines: circular or band saws, wood shapers, wood jointers, planers, sandpaper or wood-polishing machinery; picker machines or machines used in picking wool, cotton, hair, fur, or any upholstery material; paper-lace machines; burnishing machines in any tannery or leather manufactory; job or cylinder printing presses having motive power other than foot; wood turning or boring machinery; stamping machines used in sheet metal and tinware manufacturing or in washer or nut factories; machines used in making corrugating rolls; dough brakes or cracker machinery of any description; wire or iron straightening machinery; rolling mill machinery; power punches or shears; washing, grinding, or mixing machinery; calendar rolls in rubber manufacturing; or laundering machinery.
>
> No child under 16 years of age may be employed or permitted to work at adjusting or assisting in adjusting any belt to any machinery, or oiling or assisting in oiling, wiping, or cleaning machinery; or, in any capacity, in preparing any composition in which dangerous or poisonous acids are used; or in soldering; or in the manufacture or packing of paints, dry colors, or red or white lead; or in the manufacture, packing, or storing of powder, dynamite, nitro-glycerine, compounds, safety fuses in the raw or unvarnished state, electric fuses for blasting purposes, or other explosives; or in or about any distillery, brewery, or other establishment where malt or alcoholic liquors are manufactured, packed, wrapped, or bottled; and no female under 16 years of age shall be employed or permitted to work in any capacity requiring such female to stand continuously.
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> No person under 18 years of age shall be employed or permitted to have the care, custody, or management of or to operate an elevator, either for freight or passengers, running at a speed of over 200 feet per minute.

Night Messenger Service.—The campaign begun against the employment of boys in the night messenger service, on account of its unquestioned moral dangers resulted last year in special enactments in eight states. Four states — Massachusetts, New Jersey, Wisconsin and Utah—have fixed a 21-year age limit, and four others—Michigan, New Hampshire, Oregon and Tennessee—have fixed an 18-year limit. Oregon has fixed a 16-year age limit for employment in the messenger service at any time. New York in 1910 fixed an age limit of 21 and Ohio one of 18.

Street Trading.—Important restrictions to regulate street trading were enacted in Nevada, New Hampshire, Utah, Wisconsin and Missouri. The Wisconsin law, which is by far the most perfect, raises the age limit for selling newspapers and periodicals from 10 to 12 years for boys and from 16 to 18 years for girls. Boys under 14 are forbidden to sell newspapers, etc., after 6.30 p. m. in winter and 7.30 p. m. in summer (instead of after 10 p. m. as before). A parent permitting a child to work, or any person employing a child without a license, is liable to a fine of $25 to $100 or imprisonment for 10 to 60 days.

Hours of labor for children were shortened in ten states. The eight-hour day for all children under 16 was established for the first time in Colorado, Missouri and Wisconsin. In all, ten states and the District of Columbia have now established an eight-hour day for all children under 16. Children under 16 have been excluded from all night work for the first time in six states, while California has excluded all under 18 after 10 p. m. Night work in practically all occupations, for children under 16, between certain hours which are most commonly 7 p. m. to 7 a. m., is now forbidden in no less than 31 states. Employment certificates were adopted for the first time in Colorado, West Virginia and Utah, while improvements in the issuing of the same, better proof of age or increased school requirements were made in seven other states.

The constitutions of the new states of Arizona and New Mexico illustrate the tendency of today for better protection to the immature child and, as far as possible, his elimination from industry. Both provide that their legislatures shall enact suitable laws for the regulation of the employment of children. Arizona's constitution goes further and requires that no child under fourteen years of age shall be employed in any gainful occupation during school hours, and that no child under sixteen years of age shall be employed in mines or in any injurious or hazardous occupation or in any work at night or more than eight hours a day.

FEMALE LABOR

Advances have been made in the legal protection of women workers along three different lines—hours, wages, and the prohibition of work just before and after childbirth. The movement for the eight-hour day is gaining ground, as is evident from the fact that California and Washington enacted eight-hour laws for women. The California law applies to manufacturing, mechanical, mercantile, telegraph or telephone establishments, to laundries, hotels or restaurants, and to express or transportation companies. The Washington law applies to mechanical or mercantile establishments, laundries, hotels or restaurants. This law also provides that a judgment of unconstitutionality given against any part of the act shall not affect any other part. Both laws exempt the canning industry. Eight-hour bills were hard fought for in Illinois, Ohio and Wisconsin.

In Illinois the ten-hour law of 1909 was extended to practically all employments, a 54-hour week was secured in Ohio and in Missouri, and the ineffectual eight-hour law of 1867 in Wisconsin was replaced by a 55-hour week, which applies to manufacturing, mechanical or mercantile establishments, laundries, restaurants, confectionery stores, telegraph or telephone offices or exchanges, and express or transportation companies. If any part of the work falls between 8 p. m. and 6 a. m. for more than one night a week, such work shall be considered night work, which is then limited to eight hours a day and 48 a week. One hour must be allowed for dinner.

The employment of women in Utah for more than nine hours a day is forbidden in an extensive list of employments. Massachusetts reduced the working hours of women from 56 to 54 a week, and enacted a law prohibiting the employment of women for two weeks before and four weeks after childbirth.

Minimum Wage.—In Minnesota, Wisconsin and Massachusetts bills were presented relating to the establishment of minimum wage boards. The Minnesota and Wisconsin bills,

which provided for the creation of such boards, were defeated; but the Massachusetts bill, which provided for a commission to study the subject, was passed, and the commission will report in January, 1912. Connecticut also has a commission on woman's work, with very broad powers of investigation.

HOURS OF LABOR

Most of the laws of last year upon the subject of hours of labor for men relate to private employment, but in a few states hours in public employment also were limited. In both classes of laws there is a tendency to make enforcement possible by expressly forbidding any one to "require or permit" employees to work more than the specified time.

The Eight-Hour Day.—Four laws limiting hours of labor to eight a day in public employment have been enacted in Connecticut, Massachusetts, New Jersey and Wisconsin. The long fought battle in Massachusetts has at last resulted in the passage of an effective law, but Wisconsin has gone a step further by adding that the proved fact of work for more than eight hours is *prima facie* evidence of a violation, and also by carefully defining the meaning of "emergency." An eight-hour work day is also required for employees in all work on the new submarine torpedo boats in process of construction for the United States Navy.

Railroads.—There is a distinct tendency, especially in the western states, to limit the hours of all employees in certain dangerous occupations, notably mining and the operation of railroad trains. The Nebraska and North Carolina laws have provided that employees engaged in the movement of trains must not be required or permitted to remain on duty for more than 16 consecutive hours, after which they must have at least ten consecutive hours off duty, and after being on duty for 16 hours in 24 they must have at least eight consecutive hours off duty. Train dispatchers and employees engaged in similar occupations must not be on duty longer than nine hours in 24 at offices, etc., operated day and night, or 13 in offices operated only during the day, except in emergencies, when four additional hours are permitted for three days in any one week. Oregon directs that employees of common carriers, while engaged in or connected with the movement of trains, are not to be required or permitted to remain on duty longer than 14 consecutive hours, after which period they shall have at least ten consecutive hours off duty. After being on duty for an aggregate of 14 hours in any 24, they shall have at least eight consecutive hours off duty. Train dispatchers and employees engaged in similar occupations are limited to nine hours' work in 24, except four additional hours on three days in a week in case of emergency. The California law limiting hours is similar to the above.

A tendency to extend and strengthen the eight-hour day in and about mines is apparent, and the beginning of the "one day rest in seven" movement is seen in Connecticut, although this law is extremely limited in its operation. Hours have been reduced from 66 to 60 a week in textile mills in Georgia and in all manufacturing establishments in North Carolina.

WAGES

Wages.—Of the 40 states which held legislative sessions during 1911 28 passed laws relating to wages. Mechanics' lien laws were enacted or amended in 17 states. In Connecticut and Wisconsin wages are preferred claims against the estates of deceased persons, and payment in scrip or in non-negotiable evidence of indebtedness or in merchandise is forbidden in California, Indiana, Nevada and New Hampshire. The time when discharged employees are to be paid is regulated in several states. In Indiana wages must be paid weekly, instead of every two weeks as before, to all employees in mining and manufacturing industries, and in Maine to all employees in mining, quarrying, manufacturing and mercantile industries, and to all employees of street railways, telegraph or telephone, or incorporated express

or water companies. In Missouri all corporations and in New Jersey all railroad companies must pay wages semi-monthly; and Massachusetts provides that in manufacturing establishments in which there are 100 or more employees wage payments must be made before the close of the regular working hours. Assignments of wages are regulated in six states—Alabama, Massachusetts, Minnesota, Missouri, Montana and Ohio; Missouri safeguards their garnishment; and New York amends two previous laws relating to executions. The wages of certain public employees are fixed in Nevada and Massachusetts; Idaho makes it unlawful for an employer to impose as a condition of employment any terms as to where a workman shall board or lodge or as to the place where he shall make his purchases; and Massachusetts prohibits employers from imposing fines for imperfections in weaving.

WORKMEN'S COMPENSATION AND EMPLOYERS' LIABILITY

Commissions.—In addition to the state commissions on employers' liability and workmen's compensation previously appointed in eleven states (Minnesota, Wisconsin and New York in 1909 and in 1910 New Jersey, Montana, Washington, Ohio, Illinois, Maryland, Missouri and Massachusetts, and by the federal government in 1910) the legislation of 1911 provided for the creation of similar commissions in nine other states—Colorado, Connecticut, Delaware, Iowa, Michigan, North Dakota, Pennsylvania, Texas and West Virginia—and, by a special resolution, in Nebraska. In New Jersey a commission was authorized to observe the operation of the employers' liability act, and the term of office of the Massachusetts commission was extended.

Workmen's Compensation.—As a result of the widespread movement for reform in dealing with industrial injuries, ten states last year passed laws providing compensation for injured employees.

The principle of compensation involves in the main the following points: payment for injuries or death irrespective of fault or negligence except where caused by wilful misconduct or other aggravation of responsibility; the benefit payable, bearing a definite relation to the former earning capacity, subject to minimum and maximum amounts, and not intended to give full indemnity; the payment of the benefit in periodical installments, subject to commutation to a lump sum under specified conditions; denial of compensation for a brief initial period, in order to eliminate the great mass of insignificant injuries, but liberal provision for medical treatment; encouragement of arbitration; abrogation of the right of action at common law, except where the fault of the employer is aggravated.

In discussing the constitutional question involved in the compensation acts, Prof. Ernst Freund says:

> It was generally recognized in considering the change from liability to compensation that the abandonment of fault as the basis of liability presented a constitutional question, and all the commissions obtained legal advice and expressed their own conclusions with reference to the legal practicability of the new scheme. The constitutional question was concededly a new one, that is to say, there was no precise authority squarely in point, either for or against the compensation plan. The preponderance of opinion was that the unwritten limitations of state and federal constitutions did not prohibit a reform whereby the burden of accidents due to risks of trade should be placed at least in part upon employers instead of upon the employees exclusively. The reasons for this conclusion were perhaps most fully and fairly presented by the able and conservative report of the New York commission, and the New York act embodied the limitations and safeguards which were believed necessary to reconcile the new rule of law with inherent limitations upon legislative power.
>
> It was therefore a very serious blow to the hopes of those favoring the system of compensation when the Court of Appeals of New York declared the act, passed upon the recommendation of the commission of that state, to be unconstitutional, as violating the guaranty of due process. This being the first judicial decision of a court of last resort upon this phase of constitutional law and the decision having been rendered by a unanimous court and one of the highest standing in the

country, it was felt in other states where compensation bills were pending that it would be unwise to press measures based upon the principle thus rejected, and all these states, except Washington, made their laws at least nominally optional or elective.

They all establish presumptions in favor of election, to be overcome only by express notices of dissent or non-acceptance, generally for both employers and employees, but in California, and under the insurance systems, only for employees.

A further pressure was sought to be exercised upon the employer by taking from him the well known common-law defenses of assumption of risk, fault of fellow servant, except in Nevada, and in Wisconsin only where there are at least three employees, and the absolute bar of contributory negligence, substituting for the latter the doctrine of comparative negligence and disallowing the defense altogether where the employer had violated a statute, or where the employee was not wilfully negligent.

The scheme of elective compensation was adopted in California, Illinois, Kansas, New Hampshire, New Jersey and Wisconsin*; compulsory compensation modified by the rule of comparative negligence in Nevada; an elective insurance system in Massachusetts† and Ohio; and in Washington a state insurance system§ was provided, compulsory as to certain enumerated employments and elective as to all others. The employer bears the cost of compensation in all states except Ohio, where the employees contribute 10 per cent. of the cost of the insurance. In most of the states the laws apply to an enumerated list of dangerous employments, but in Massachusetts, New Jersey, Ohio (where five or more are regularly employed), and in California and Wisconsin (except casual), all employments are covered. In California, Massachusetts, Ohio, Washington and Wisconsin special boards or departments are created to administer the acts.

The amount of compensation allowed in case of death (where there are dependents) runs from three to four years' earnings (in Ohio, six years'), with a minimum amount of from $1,000 to $1,500, and a maximum amount of from $3,000 to $5,000. In Washington a monthly compensation of from $20 to $35 is allowed during dependency or childhood.

In case of total disability the injured workman is allowed from 50 per cent. to 66 2-3 per cent. of weekly earnings, but is limited to a weekly sum of from $4 to $12; a time limit is also placed, extending from eight to 15 years, or after a certain amount of money has been paid. Illinois, Ohio and Washington have no time limit. In case of partial disability most of the states reduce the amount of compensation and the period of payment in proportion to the injury. New Jersey and Massachusetts have a schedule of injuries and the compensation allowed. Payment begins from one to two weeks after disablement (in Washington, immediately) and savings or benefits due the injured workman are not to be considered in fixing compensation.

Employers' Liability.—Four states—Arkansas, Kansas, Montana and South Dakota—have changed the existing employers liability laws relating to railroads by abrogating the fellow servant rule; by making the employer liable when an injury is caused by a violation of the safety law; by abrogating the defenses of contributory negligence and assumption of risk when legal protection is not provided and in other cases by substituting comparative for the absolute defense of contributory negligence.

Notable laws were enacted in Indiana and Oregon greatly increasing the liability of the employer, especially in dangerous trades, such as building construction and the handling of electricity. Nebraska also passed a similar law applying specifically to building construction work and to all manufacturing or mercantile establishments where eight or more are employed. Among the several other laws which were enacted two excellent provisions are found in Wisconsin. One provides that in all actions for damages, no statement made by the injured person within 72 hours

* Declared constitutional in the case of Borginis et al. vs. the Falk Co.

† Declared constitutional in Opinion of Justices, Senate No. 615.

§ Declared constitutional in the case of Davis-Smith Co. vs. C. W. Clausen.

after the injury shall be used in evidence against him, unless admissible as part of the *res gestae;* the second act provides that where an attorney has appeared for the injured person, no settlement will be valid without the consent of the attorney or an order of the court. Non-resident alien relatives are now entitled to the benefits of the liability law in Wisconsin and in Pennsylvania.

REPORTING OF ACCIDENTS AND DISEASES

Industrial Accidents.—As a result of the wide-spread movement for reform in dealing with the problem of industrial injuries, many laws were enacted in 1911 for the purpose of securing reliable information concerning the extent and nature of work accidents and diseases.

Thirteen states and the United States passed laws which are intended to supply more complete data with reference to industrial accidents. There is an apparent tendency to require the notification of practically all accidents rather than merely of serious or fatal ones. Supplemental reports, moreover, are now required in a large number of states after the expiration of a specified period following the accident.

Occupational Diseases.—Six states enacted laws requiring physicians to report cases of several well-defined occupational diseases, precisely as they have long reported maladies of a contagious nature. In California, Michigan, Wisconsin, New York and Connecticut physicians must report all cases of anthrax and of compressed-air illness and all cases of industrial poisoning from lead, mercury, arsenic, phosphorus or their compounds. In Illinois employers are required to cause all employees who come into direct contact with such dangerous processes as those involved in the use of sugar of lead, white lead, lead chromate, litharge, red lead, arsenate of lead, paris green, or in the manufacture of brass or the smelting of lead or zinc, to be examined once every calendar month by a licensed physician, who must report immediately to the State Board of Health the result of the examination. If a diseased condition is found, the physician must report the name, address, age, sex, last place of employment of the patient, the name of the employer, and the nature and probable extent of the disease. A copy of the report must be transmitted by the Board of Health to the Department of Factory Inspection.

FACTORIES AND WORKSHOPS

Fire Protection.—The disastrous factory fires in Newark and New York led many states to provide more adequate protection against fire. In New Jersey a new law lays down detailed rules for the prevention of fire and for means of escape in case of fire. Ohio, Wisconsin, Minnesota, Colorado and New Hampshire have also raised their standards of safety in this regard, and Pennsylvania provides for monthly fire drills in all industrial establishments where women or girls are employed. In many states, too, fire marshals have been appointed or their duties increased. These officials have supervision over factories and workshops and also over theatres, hotels, churches and tenement houses. A bill amending the charter of Greater New York so as to allow the fire commissioner to reorganize his department and to provide for a bureau of fire extinguishment and a separate bureau of fire prevention with enlarged powers, passed both houses and was finally signed by the governor.

Safety of Machines and Processes.—There is a marked tendency to strengthen the laws for the safety of workingmen in factories and workshops, as well as in mines, by allowing the inspectors to close down any establishment or to prohibit the use of any particular machine which is inimical to the health or safety of employees. In Minnesota the Commissioner of Labor may prohibit the use of any machine which is in a dangerous or unsafe condition until the required safeguards have been provided. Ohio created a Board of Boiler Rules similar to that which has been in successful operation in Massachusetts for several years. Massachusetts authorized an investigation by the State Board of Health

of the relation of lighting conditions in industrial establishments to eye injuries and occupational diseases.

The Illinois law, providing for special devices to protect employees engaged in peculiarly dangerous processes, is the first of its kind in America. This law requires all employers engaged in any work which subjects employees to any disease or illness peculiar to such work, to provide reasonable and approved preventive devices. In addition, employers engaged in processes involving the use of certain enumerated kinds of poisonous lead or paris green, or engaged in the manufacture of brass or the smelting of lead or zinc, must provide, without cost to the workmen, proper working clothes which employees must wear while at work; respirators must be provided and worn where noxious or poisonous dusts are present; and employees engaged in poisonous or injurious processes must be examined by a physician once each month. The physician must report the results of all such examinations to the State Board of Health, which then transmits the information to the State Department of Factory Inspection. Properly equipped dressing rooms with compartments for a change of clothing, lavatories with hot and cold water, soap, towels and shower baths, lunch rooms separate from rooms where dangerous processes are used, and closed receptacles for drinking water, must be maintained, and food or drink must not be taken into rooms where dangerous processes are carried on. Poisonous or injurious dust or fumes must be carried off; floors where dangerous processes are carried on must be kept smooth and hard, must be dampened before sweeping, and must be scrubbed once a day; the handling of ore, slag, dross or fume and other dangerous processes must be done wherever practical in a separate room, and such materials must be dampened before handling. Employers are liable for damages for any injury to the health of an employee proximately due to a wilful violation of the provisions of the act.

The Pennsylvania and New Jersey laws for the protection of employees engaged in foundries are also notable. Standards of protection in manufacturing establishments were raised also in Nebraska, Iowa, Maine and New Hampshire.

BUILDING CONSTRUCTION

Strong measures for the protection of employees in the building trades were enacted in Oregon, Indiana and Nebraska and in a few other states. Both the Oregon and the Indiana laws provide that the use of protective devices be "limited only by the necessity for preserving the efficiency of the structure . . . and without regard to the additional cost of suitable material or safety appliance and devices." In connection with each of the three acts mentioned an employers' liability law modifies or takes away the main defences of the employer, making it more easy for the workman to recover damages in case of injury.

MINES

Frequent mine disasters, attended by great loss of life, have called attention within the last two years to the need for more stringent legal regulations for the comfort, health and safety of miners. This has led to the establishment of a number of state mining boards and of the federal Bureau of Mines. Within the past year, moreover, Alabama, Illinois, Iowa, Montana and Pennsylvania have completely revised or codified their mining laws. The business of mining was regulated in ten other states with reference to fire-fighting equipment, telephone systems, ventilation, cages and hoisting apparatus, storage of explosives, and the housing and care of work animals. Many states increased the number, and enlarged the powers, of their inspection staff.

In Illinois, a Mining Investigation Commission was created to study the methods and conditions of mining coal, with special reference to the safety of life and property and to the conservation of coal deposits. An annual appropriation of $4,500 was made for the study, in coöperation with the U. S. Bureau of Mines and

the University of Illinois, of the coal-mining industry. An annual appropriation of $30,000 was provided for the use of the Mine Rescue Station Commission in the equipment and maintenance of mine rescue cars and stations, and to cover expenses of lectures upon first aid and other technical subjects. A form of educational work was established, to be known as the Illinois Miners' and Mechanics' Institutes, with a view to the prevention of accidents in coal mines and other industrial plants, to the promotion of technical efficiency in persons working in and about mines, and to the overcoming of mining difficulties.

RAILROADS

Fifteen states enacted laws designed for the protection of railroad employees against accident. The authority and duties of railroad commissions are in some way increased in nine states (see also XX, *Public Services*): six have passed legislation relating to adequate train crews; six have established a standard for the construction of caboose cars; three have required a certain amount of experience or training for engineers, firemen, conductors, brakemen or signal men; two have passed general legislation relating to air brakes, and two legislation providing for the safeguarding of frogs and switches. Indiana authorized the Railroad Commission to appoint a locomotive-boiler inspector, regulated the height of bridges, and strengthened its regulations in regard to automatic bell ringers and signal lights on switches. Oregon provided for sheds to protect employees on repair work. In Colorado and South Carolina the railroad commissions were given authority to make and enforce whatever rules they deem necessary to prevent accidents, and in Washington, to investigate all accidents and to supervise the establishment of a specific standard of safety appliances.

TRADE DISPUTES

Little direct legislation has been enacted during the past year upon the important subject of the settlement of strikes. The new Georgia Commissioner of Commerce and Labor was empowered to inquire into labor disturbances with a view to their adjustment, and the Labor Commissioner of New Hampshire was directed to attempt, upon request, the settlement of labor disputes. Alabama has created a State Board of Mediation and Arbitration, but the Michigan law of 1889 creating an arbitration board was repealed. Massachusetts has taken her lesson from England and has made it legal for a union to impose fines upon its members. Four states—Colorado, Nevada, New York and Wisconsin—have endeavored to prevent the breaking of strikes through employees secured by false advertisements or representations, and in Colorado and Nevada any person so injured is given a cause of action for recovery of damages.

Labor Contracts.—Colorado has made illegal the type of labor contract which has been used by mine operators and others since the labor disturbances of 1904 to prevent the growth of trade unions. Employers are now forbidden to demand as a condition of employment any contract or agreement, in writing or otherwise, that a person shall not belong to any lawful organization or society, or for him to prohibit or restrain an employee from exercising "his social, financial, fraternal or business rights" in connection with such organization. "Any such contract, agreement or reservation or condition" is made *prima facie* evidence of violation.

Blacklisting.—Several states have attempted to prevent blacklisting by requiring employers to give explicit letters stating the cause of dismissal, and Connecticut has carefully regulated the conduct of blacklisting agencies by providing that no person or association may "maintain, subscribe to, belong to, or support any bureau or agency conducted for the purpose of preserving and furnishing to any member thereof or to others information descriptive of the character, skill, acts, or affiliations of any person whereby his reputation, standing in a trade, or ability to secure employment, may be affected, unless a complete record of such information shall be open at all reasonable times to the inspection of the per-

son to whom such information relates, or his duly authorized agent or attorney." These records must be "reasonably clear and unambiguous," and must be open to the inspection of the Commissioner of the Bureau of Labor Statistics.

The Wisconsin law, requiring the publication of contracts or agreements between employers and employees, which has long been urged by socialists and trade unionists, was finally enacted last year.

PRISON LABOR

The prison labor legislation of the past year shows definite tendencies toward the state's assumption of its responsibility for its own use of the prisoners on state lands, in state mines and as operatives in state factories.

While no state legislated to give new powers of leasing or contracting for the labor of prisoners and, one only, Idaho, extended the field of its present leases, 21 made some provision for the state's assumption and operation of industries; eight—California, Idaho, Indiana, Missouri, New Jersey, North Dakota, Ohio and Wyoming—provided in some manner for the state's consumption of the manufactured articles; and six—California, Indiana, Missouri, New Jersey, Ohio, and Wyoming—established laws for the regulation of prices and standardization of commodities. The prisoner received compensation for labor in six states—Florida, Kansas, Michigan, Nevada, Rhode Island and Wyoming; his dependent family was given assistance in five—Colorado, Maine, Massachusetts, Missouri and New Jersey; while Nevada gave him the right to choose between working on the roads or working indoors. Florida met the peonage issue by a provision for working off fines during imprisonment. The antagonism of organized labor to the distribution of the products of the convict's labor in the open market resulted in the passage in Montana, Oregon and California of laws requiring branding of convict-made goods. The New Jersey and Wyoming laws are especially complete.

In New Jersey the sale in the open market of the products of convict labor of any state penal institution was prohibited after the expiration of existing contracts. A preferred market was established consisting of all manufacturable articles consumed by the state and sub-divisions thereof. A Prison Labor Commission was created so to regulate the penal industries that the greatest amount consumable by this preferred market will be produced. It is to publish a list of all possible articles of manufacture and grant releases when articles cannot be supplied.

Agricultural pursuits are to be given preference over all others and the products sold as above, except that the surplus products may be sold at advertised auction to the general public once in six months unless they are of perishable character and require more immediate sale. Counties and municipalities are to conform to the state plan, but may employ the prisoners for their own use.

Charitable institutions are allowed to manufacture for their own use. Prisoners' families dependent on charity are relieved by the Commissioner of Charities at the rate of 50 cents for every day the prisoner works, but this relief fund is limited to 5 per cent. of the value of all goods produced. The services of charitable societies may be used for making investigations of families. The estimates of added appropriations needed to carry this into effect are to be included in annual estimates. The commission reports to the governor.

UNEMPLOYMENT

The establishment in New York of the first American industrial farm colony for tramps and vagrants marks an especially significant step. A woman investigator of domestic employment agencies was authorized in Illinois, and in seven other states laws were enacted relating to private agencies, regulating the granting of licenses, fees, the keeping of adequate records of employment secured, and providing other safeguards for the prevention of fraud. In five states public employment offices were established or extended. The commission which has been investigating employment agencies in Massachusetts is continuing its work.

XVII. PREVENTION, CORRECTION, AND CHARITY

HASTINGS H. HART

The most significant events of the past year in the fields of prevention, correction and charity, seem to the writer to be the following:

I. In the field of prevention, the extraordinary campaigns in New York, Chicago, Philadelphia, and other large cities, for the prevention of infant mortality; the rapid development of the study of children and defectives in medical and psychological clinics; the execution of extraordinary programs of preventive legislation in California, and New Jersey, and the great Child Welfare Exhibits in New York, Chicago and Kansas City.

II. In the field of correction, a vigorous movement for the establishment of reformatory prisons for women; the inauguration of an intelligent study of defective delinquents, with a view to the segregation of irresponsible prisoners from the general mass of convicts; the development of state and municipal farms for the care of misdemeanant prisoners.

III. In the field of charity, the organization of the National Association of Societies for Organizing Charity; the passage of laws in Illinois and Missouri providing pensions for widows whose families would otherwise be compelled to be broken up; the substitution of "the Board of Control system" for "the local trustee system" in the state of Ohio; the South Dakota law prescribing fireproof construction and minimum air space and supply of air for ventilation in hospitals for the insane.

The author is indebted to *The Survey*, *The Review* (a journal of penology) and *The Institution Quarterly*, and to the Secretary of the National Conference of Charities and Correction, for much of the information here recorded.

PREVENTION

CONFERENCES

The National Conference of Charities and Correction.—The thirty-eighth session of the National Conference of Charities and Correction was held in Boston, June 7-14, 1911. The thirty-ninth Conference will be held in Cleveland, Ohio, June 12 to 19, 1912.

State Conferences of Charities and Correction.—State conferences of charities and correction are held annually in the 29 states Alabama, California, Colorado, Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, Washington, and Wisconsin. There is also a Canadian Conference of Charities.

Texas.—The first Texas State Conference of Charities and Correction met at Houston, in Nov., 1910, under a call issued by the Child Welfare Conference which was held in Ft. Worth, Texas, in Nov., 1909.

Child-Welfare Conferences.—Child-welfare conferences were held with the Child Welfare Exhibits in New York, Chicago, and Kansas City. Child-welfare conferences are being organized by the national and state congresses of mothers in different parts of the United States. These conferences deal with all the prob-

lems of child life, from eugenics to white hearses.

Maryland.—A Children's Conference was held in Baltimore in Feb., 1911, in connection with the semicentennial of the Henry Watson Children's Aid Society.

Ohio.—The Western Reserve Conference on the Care of Neglected and Dependent Children was held in Cleveland Nov. 17-19, 1910. Forty-five organizations took part and 41 exhibitions were made showing the work of the different organizations. The Conference resulted in an organization for coöperative work by the local organizations.

Virginia.—A child-welfare conference was held at Richmond, Va., May 22-25, 1911. The conference brought together delegates from the principal cities of Virginia, and was notable for the high quality of its discussions, and especially for the active participation of the younger physicians of the state.

Miscellaneous Conferences.—In addition to the national and state conferences of charities and correction there is a considerable number of conferences under different names, which deal with charity, correction, and prevention. Among these we mention:

American Society of Municipal Improvements; American Society of Sanitary and Moral Prophylaxis; American Association of Workers for the Blind; American Institute of Criminal Law and Criminology; American Prison Association; Association for the Study and Prevention of Infant Mortality; Association of Medical Superintendents of Hospitals for Insane; Conference of Catholic Charities; Conference of Middle Western States Juvenile Court Judges and Officers; Conference on the Education of Dependent, Backward, Truant, Delinquent Children; Congress on Purity; Federated Boys' Clubs; Lehigh Valley (Penna.) Child-Helping Conference; National Association of Remedial Loan Associations; National Conference of Poor-Law Officials; National Municipal League; National Probation Officers' Association; New York Conference of Probation Officers; Sagamore (Mass.) Sociological Conference; Social Center Association of America.

PREVENTIVE SOCIETIES

Child Welfare—*California.*—The legislature of 1911 enacted a law providing that all child-placing agencies shall obtain permits from the State Board of Charities, and making it misdemeanor to place children or solicit funds therefor, without such a permit.

A Juvenile Court Auxiliary has been organized in connection with the San Francisco Juvenile Court.

Florida.—A State Children's Bureau has been established in Florida. This Bureau takes up every case in the state that pertains to children in any way, and not only acts as a clearing house, but provides the money so that the proper care can be given.

Georgia.—The Children's Home Society of Georgia was organized in 1911 to care for homeless and neglected children, especially by the placing-out method.

Idaho.—The legislature of 1911 passed a law providing for the payment from county treasury of a lump sum of $25 to voluntary societies for each child committed by the court, and $10 per month for the temporary care of such children by the society until committed; providing also for the transfer of children from the State Industrial School to the Children's Home Finding and Aid Society for the purpose of placement in family homes, and giving the Society $100 for each child so placed.

Maryland.—The Maryland Children's Aid Society has been organized to cover the entire state of Maryland. It is an expansion of the work of the Henry Watson Children's Aid Society of Baltimore.

Washington.—A Juvenile Aid Association has been organized at Seattle for the protection of neglected and delinquent children.

Infant Mortality.—*Alabama.*—Birmingham has organized a Committee for the Prevention of Infant Mortality.

Colorado.—The legislature of 1911 passed an act to regulate maternity or lying-in hospitals.

Connecticut.—The Pure Milk Committee of the Consumers' League cared for the babies of New Haven at three pure milk dispensaries.

District of Columbia.—Additional milk stations have been established for the distribution of pasteurized and modified milk for babies.

Illinois.—In Chicago on July 31, 1911, 8,000 babies were being cared for by 53 nurses assigned to the poorer districts. The private agencies and the Board of Health cooperated on a larger scale than ever before.

Kentucky.—The Babies Milk Fund Association of Louisville had four stations operating throughout the year instead of summer stations only.

Louisiana.—The Era Club of New Orleans in the summer of 1911 maintained pure milk stations for the distribution of milk at a nominal cost. Mothers were instructed in all that pertains to their babies.

Maryland.—Baltimore, through the Henry Watson Children's Aid Society, waged war on baby farms and illicit maternity hospitals.

Massachusetts.—In Boston in 1911 the Milk Consumer's League gave special attention to the production of milk. Through the Milk and Baby Hygiene Association they managed nine milk stations where modified milk could be obtained, in settlements that had been stores. The District Nursing Association gave great attention to expectant mothers.

Michigan.—The legislature of 1911 enacted a law providing for the licensing of maternity hospitals and placing all such hospitals under the direct supervision of the State Board of Corrections and Charities.

Minnesota.—Minneapolis has organized an infant welfare committee. The legislature of 1911 passed a law authorizing boards of county commissioners to employ visiting nurses; also a law providing that every child born in a lying-in place shall be reported forthwith to the county probate judge. Such children may be placed with foster-parents on a permit, issued, after investigation, by the probate judge.

Missouri.—A crusade against infant mortality is being pressed in St. Louis. The Pure Milk Commission on July 24, 1911, reached a daily milk distribution of 110 gallons.

Nebraska.—The legislature of 1911 passed a law regulating maternity hospitals, maternity boarding houses and lying-in hospitals; also, the placing out of children born therein and the proper reporting of all children born therein. The State Board of Health has authority to license such institutions.

A bill was passed to prevent, as far as possible, traffic in baby farms.

New Hampshire.—The legislature of 1911 enacted stringent laws regulating lying-in hospitals and infant boarding houses. The State Board of Charities and Corrections is given power to license them upon proper certification by local Boards of Health; also the right of after-supervision. The legislature of 1911 made provision for certified and inspected milk.

New Jersey.—Newark, through its Public Welfare Committee, opened several stations in 1911, where pure milk could be obtained, and where the education of mothers was undertaken.

New York.—The city of New York made appropriation in Oct., 1911, for the maintenance of 52 milk stations, to be carried on by the City Health Department. The city has taken over the milk stations formerly maintained by the New York Milk Committee. Most of these stations will be maintained summer and winter. During the summer of 1911, 89 milk stations were maintained by different organizations, 17 of them by the Health Department.

A Eugenics Record Office was established in the spring of 1911 at Cold Spring Harbor, Long Island. It "aims to get full and reliable data concerning physical and mental characteristics of human families and the inheritance of such characteristics through several generations, with a view to studying such data and deducing from them the underlying laws which control human inheritance."

North Dakota.—The legislature of 1911 passed a law making it a punishable offense to keep baby farms.

Ohio.—The Cleveland Babies' Dispensary was opened June 16, 1911.

It was built at a cost of about $100,000, and is probably the most complete institution of its kind in America. Guaranteed milk is sold to poor mothers at ordinary prices, but mothers are encouraged and urged to nurse their own babies.

The City Council of Cleveland appropriated $10,000 for infant mortality work in 1911, which is used by the city Board of Health in cooperation with the Babies' Dispensary.

Pennsylvania.—Pennsylvania, with Philadelphia in the lead, made a hard fight in 1911 for state-wide purification of the milk supply.

A "Milk Exhibit" was held in Philadelphia, May 20-27, 1911, to exhibit proper methods of producing, transporting, marketing, and feeding milk. A Milk Conference was held in connection with the exhibit. A valuable report was published.

Virginia.—A baby hospital was established in 1911 at Lakeside Park, near Richmond, under the direction of the Richmond Instructive Visiting Nurse Association, to care for indigent, sick babies during the summer months.

The General Assembly of 1910 enacted a law requiring all maternity hospitals, homes for infants where children under five years of age, not relatives, are boarded, to obtain licenses from the local boards of health on recommendation of the State Board of Charities and Corrections.

Prevention of Blindness.—*Massachusetts.*—The Boston School for Social Workers investigated 5,949 births, 48 per cent. of the total births of five Massachusetts cities. It was found that 42 per cent. of the physicians had been using preventive measures, and 41 per cent. did or did not take proper precaution, according to their own judgment. Although the law requires physicians to report cases of ophthalmia neonatorum, only 33 cases had been reported to local boards of health, while 108 cases were discovered by the investigators. The Massachusetts legislature appropriated $2,500 for the free distribution of silver nitrate with instructions to physicians throughout the state.

Missouri.—The Missouri Association for the Prevention of Blindness has been organized with committeemen in all different parts of the state. A Society for the Care of the Blind has been formed in St. Louis with the purpose of extending operations ultimately over the state.

New Hampshire.—The legislature of 1911 passed an act for the prevention of inflammation of the eyes of new born babes, vesting in the State Board of Health authority to publish such information and instruction and to make such regulations as it may deem expedient in relation to this disease.

New Jersey.—The legislature provided also for free distribution by the State Board of Health of remedies for prevention of ophthalmia neonatorum, with instructions for their use.

North Carolina.—The legislature of 1911 enacted a law for the prevention of ophthalmia neonatorum.

Tennessee.—The legislature of 1911 passed an act requiring midwives and nurses to report immediately to the health officers, or to a legally qualified practitioner of medicine, inflammation of the eyes of newly born infants, under penalty.

Vermont.—The legislature of 1911 passed a bill to secure the prevention of blindness in infants.

Prevention of Cruelty to Children.—*Alabama.*—The legislature of 1911 provided for appointment of officers to enforce laws for prevention of cruelty to animals and children.

Massachusetts.—The Massachusetts Society for the Prevention of Cruelty to Children has established many local centers throughout the state. These centers tend to concern themselves not only with cruelty and neglect, but also with the causes thereof.

Medical and Psychological Examinations and Clinics.—The National Dental Association has established a permanent committee on dental clinics, and such clinics are being established in a number of cities.

California.—The California Society for the Study and Prevention of gonorrhoea and syphilis has been organized, with headquarters at Sacramento.

Kentucky.—In Louisville about 35 parent-teachers associations are working for the installment of nurses in the public schools.

Minnesota.—The legislature of 1911 made financial provision for the expert examination of the inmates of state institutions, including their social history.

The Supreme Court of Minnesota holds that the medical inspection of school children is a proper exercise of the duties of members of School Board.

Massachusetts.—The legislature of 1911 extended the civil service law to cover school physicians.

New Jersey.—The legislature of 1911 appropriated for research $2,800 for the State Hospital for the Insane at Trenton, $1,800 for the State Home for Girls, and $3,000 for the Department of Charities, a total of $7,600. Studies are also being made with reference to the inmates of the state institutions for feeble-minded women, the State Reformatory at Rahway, the State Village for Epileptics at Skillman, and the State Training School for Boys at Jamesburg. At the last two institutions trained psychologists are at work, and are making careful studies of the mental activities, growth, etc., of the wards of the state. Cities are allowed to expend $5,000 for the maintenance of free dental clinics.

New York.—Clause 79 of the "Page Law" was pronounced unconstitutional by the New York Court of Appeals in 1911. This Clause provided for medical examination of prostitutes after conviction, with detention in a hospital for a maximum term of one year, if the woman physician of the Board of Health found them suffering from venereal disease.

Rhode Island.—The legislature of 1911 enacted a law providing for an annual state appropriation for the medical inspection of schools in towns and cities to cover one-half the annual expenditure for such purpose, not exceeding $250 yearly. School physicians are to examine yearly pupils, teachers and janitors of public and private schools, including sight and hearing of children.

Texas.—A baby clinic and classes for mothers were established at El Paso, Texas, in 1911.

Utah.—A psychological clinic is maintained in connection with the State University.

Vermont.—A law has been passed providing for medical examination of schools.

Virginia.—The Virginia State Board of Charities and Correction reports that in 1910 an investigation of 31,640 school children in the state of Virginia revealed that 17,830, or 56 per cent., of those examined were more or less defective, either physically or mentally.

Washington.—The University of Washington has received a fund of $30,000, to be known as the Gatzert Foundation, the income from which is to be used in work for defective children. It will be used first for continuing a psychological clinic established in 1909, and then for work in behalf of defective children in different parts of the state.

West Virginia.—The legislature of 1911 passed a law for medical inspection of schools for special districts.

Loan Societies.—*The Survey* of June 10, 1911, reports that there are now 21 remedial loan societies operating in 18 cities, members of the National Association of Remedial Loan Associations, with an aggregate capital of eight millions. They have made loans of fifteen millions.

Delaware.—Through the Wilmington Associated Charities a Loan Association has been organized with $10,000 capital.

Minnesota.—A remedial loan society has been established in St. Paul.

Missouri.—The legislature of 1911 passed an act providing for the incorporation of reputable loan society, under state banking laws, as a substitute for loan sharks.

Ohio.—In Youngstown the Charity Organization Society has established a salary loan scheme.

Legal Aid Bureaus.—*Maryland.*—A free Legal Aid Bureau was organized in Baltimore in 1911 as a department of the Federated Charities.

Missouri.—The St. Louis Bar Association organized a Legal Aid Society in the fall of 1910 to furnish legal services to the poor at nominal rates.

Social Surveys.—*Missouri.*—The Board of Public Welfare of Kansas City is conducting a comprehensive social survey.

Minnesota.—A Vice Commission of 15 members has been appointed by the Mayor of Minneapolis to study the question of social vice in that city.

PREVENTIVE INSTITUTIONS

Institutions for Dependent Children.—*Iowa.*—The legislature of 1911 authorized for the first time the placing of soldiers' orphans in family homes, when found desirable.

New Hampshire.—The legislature of 1911 made provision for the expenses of three persons to examine into the workings of a system of centralized supervision of criminal and charitable institutions.

New York.—The children's bureau of the Department of Public Charities has gathered some interesting figures concerning dependent children in New York. The number of children proposed for commitment in the Borough of Manhattan and the Bronx has nearly doubled during eight years, from 5,424 in 1902 to 10,462 in 1909. There has been a corresponding actual increase in the number accepted from 1,761 in 1902 to 3,514 in 1909. Practically one-third of those proposed are accepted.

The direct causes of destitution were reported as follows:

	Per Cent.
Death	36
Illness	31
Desertion	24
Imprisonment	2
Intemperance	2
Lack of industry, thrift, or judgment	2
Miscellaneous	3

From 49 to 59 per cent. of the children proposed for commitment are from Catholic families; 30 to 41 per cent. are from Jewish families, and from 10 to 12 per cent. from Protestant homes. In 4,427 cases out of 6,134 where applications were disapproved, the reason assigned was ability of the parents to support children at home.

Virginia.—The Bonney Home for Girls was opened at Norfolk in March, 1911, "to provide a home and industrial training for indigent white girls."

West Virginia.—There has been recently opened a state temporary home for the care of dependent and neglected children. Children are to be placed out in homes over the state.

Public Playgrounds.—*California.*—A State Playground Association has been organized with headquarters at Oakland.

District of Columbia.—The public playgrounds which have heretofore been managed and in part maintained by a playground association will hereafter be supported and managed by the City of Washington.

Child-Welfare Exhibits.—*Illinois.*—A Child Welfare Exhibit was given in Chicago in May, 1911. A detailed report will be found under XXXVI, *Education.*

Missouri.—A Child Welfare Exhibit was held in Kansas City, Nov. 3 to 11, 1911. The exhibit followed the general lines of Child Welfare Exhibits of New York and Chicago, but was much less elaborate. The attendance, however, was said to have been larger in proportion to the population than the large attendance at the exhibits of Chicago and New York.

New York.—The New York Child Welfare Exhibit was held from Jan. 18 to Feb. 12, 1911. Details are given under XXXVI, *Education.*

Oregon.—A Child Welfare Exhibit was held in Portland in Nov., 1911, under the auspices of the Mothers' Congress of Oregon.

Canada.—A Child Welfare Exhibit will be held in Montreal in Oct., 1912. Special attention will be given to the infant mortality problem.

SOCIAL LEGISLATION

Compulsory Education.—The last legislature of Kentucky passed a compulsory education law which dovetails with the child labor law.

Guardianship of Minors.—The New Hampshire legislature of 1911 enacted a law providing for the equal guardianship of minors by both parents, similar to Connecticut.

Tobacco.—The Nebraska legislature of 1911 passed an act making it unlawful for a minor under 18 years to use tobacco in any form, under penalty.

Children's Morals.—The New Jersey legislature of 1911 prohibited attendance of children under 16 years at cheap amusement places, public dance halls and concert halls, unless accompanied by parent or adult friend.

Sterilization of Defectives.—The New Jersey legislature of 1911 passed a so-called "sterilization law," which provides for a Board of Examiners of feeble minded, epileptics, criminals and other defectives. The Board is to consist of three members, a surgeon, a neurologist, and the Commissioner of Charities and Correction. On application of an institution superintendent or on its own motion, the Board may examine into the mental and physical condition of any inmate, and if it is the unanimous opinion of the Board that procreation is undesirable, it becomes lawful "to perform such operation for the prevention of procreation as the Board may decide to be most effective." The inmate may be represented at the examination by counsel.

Migration of Dependent Children.—The North Dakota legislature of 1911 repealed the law which formerly prohibited the exchange of children from one state to another.

Codification of Children's Laws.—The Ohio legislature of 1911 established a commission of two to be appointed by the governor for the purpose of codifying all laws relating to dependent, neglected, delinquent and defective children.

CORRECTION

PENOLOGY

Census of Prisoners.—According to the preliminary count of the Census Bureau, the prison population on Jan. 1, 1910, was 109,311. The admissions or commitments to prisons during 1910 were 416,530, and the number of prisoners discharged because of expiration of sentence or other reasons, including deaths, was 458,996.

County Jails.—The Committee on Law Breakers at the National Conference of Charities and Correction at Boston in May, 1911, condemned the American county jails.

Sir Evelyn John Ruggles-Brise, Chairman of the English Prison Commission, and President-elect of the International Prison Congress of 1912, inspected American prisons in Oct., 1910. He reports to the English Home Office commending American state prisons and reformatories, but condemns the city and county jails as embodying "promiscuity, unsanitary conditions, the absence of supervision, idleness and corruption." He says: "Until the abuses of the jail system are removed it is impossible for the United States to have assigned to her by general consent a place in the vanguard of progress in the domain of 'la science penitentaire.'"

Delegates from other countries who inspected the American prisons with Sir Evelyn Ruggles-Brise expressed similar opinions, personally and officially. In two addresses, one before the International Prison Congress in Nov., 1910, and one before the National Conference of Charities and Correction in May, 1911, Dr. Frederick Howard Wines condemns the American county jail system as being altogether bad. He advocates the control of jails by the state. He says:

> The State should name, and it should have exclusive authority over, the executive agents to whom it entrusts the discharge of this supreme governmental function. . . . . What is needed is mandatory power vested in a single officer or commission and applicable to all counties and municipalities alike.

California.—The legislature of 1911 passed a law compelling the appointment of a matron in any county jail where female prisoners are kept, requiring absolute separation of male and female departments, and prohibiting the searching of female prisoners by male jailers.

Georgia.—The legislature of 1910 provided that nurses shall be supplied in county jails in the large cities.

Maine.—The legislature of 1911 repealed the act of 1909 which gave authority to the State Board of Prison and Jail Inspectors to carry out their own recommendations concerning jail equipment and management at the expense of the county where the jail is located, in case county commissioners fail to put them into effect.

Virginia.—The General Assembly of 1910 enacted a law concerning rules for the government of jails and the reduction of sentences of those therein confined.

West Virginia.—The legislature of 1911 enacted a law enabling county commissioners to employ matrons in jails and workhouses.

Prison Architecture.—At the Chicago House of Correction a cell house has recently been constructed containing 334 cells, each with an outside window which can be operated by the occupant of the cell. Each cell is equipped with high-class plumbing, including wash basin. The estimated value is $225,000. It was constructed by misdemeanant prisoners at a cash expense of $65,000. The cell house has a large central corridor used as dining room and assembly room. The plan is declared to be much more sanitary than the plan of a central cell block with corridors against the outside wall. Plans have been prepared by the state architect of Illinois for the new penitentiary at Joliet, which provide for circular cell houses, each cell house to contain 200 cells, against the outer wall, and all cells to be subject to observation from a central inspection tower. This plan was exhibited at the American Prison Association at Omaha in Oct., 1911, and excited great interest among prison wardens.

Misdemeanant Prisoners.—*District of Columbia.*—Since July 1, 1911, prisoners sentenced to jail in the District of Columbia have been sent to the new workhouse farm where they work like the workhouse prisoners.

Indiana.—The legislature of 1911 established a commission to investigate and report to the next legislature with reference to a state farm, in order to get rid of the county jail.

Maine.—The legislature of 1911 authorized establishment of a county farm by the county of Cumberland (Portland) "for the employment and reformation of inebriates, vagrants, and other mail misdemeanants. The length of detention is not prescribed but cannot be less than three months nor more than one year. County commissioners may parole inmates after three months.

New Hampshire.—The legislature of 1911 provided for a committee to report to the next legislature on the question of a state workhouse, appropriating $800 for expenses.

New York.—The legislature of 1911 enacted a law establishing a state farm and industrial colony. The state farm will receive any man over 21 years who is adjudged a tramp or vagrant, for an indeterminate sentence not exceeding 18 months for first offenders, or two years for recidivists. The Board of Managers is authorized to select a site of not less than 500 acres.

Ohio.—In the Columbus City workhouse an honor system has been established which promises to be an interesting study.

Ontario, Can.—In *The Review* for May, 1911, is reported an address by Warden J. P. Gilmour of the Central Prison, Toronto. He states that on a farm of 530 acres, 500 prisoners were taken out during the year ending April 1, 1911, of whom four escaped successfully, and three or four attempted to escape unsuccessfully. He stated that 90 per cent. of the convicts in the Central Prison could be safely taken out to work on the farm.

State Prisons.—The National Committee of Prison Labor is planning to make a study of tuberculosis in prisons. The National Association for the Study and Prevention of Tuberculosis has issued a bulletin stating that there are 12,000 tuberculous prisoners in the United States. Dr. N. S. Davis of Chicago in a recent paper stated that about 60 per cent. of all deaths in penitentiaries are due to tuberculosis. (*Survey*, Vol. xxv, Sept. 10, 1910.)

California.—The plan of discipline in the San Quentin Prison has been radically changed. The parole system has been developed, the use of the straight-jacket greatly reduced and a better spirit engendered than ever before. A new concrete cell house of 600 cells is nearly completed.

Illinois.—The legislature of 1911 passed a law designed to strengthen the state parole system by increasing the number of parole officers for the two state prisons from two to seven.

New Hampshire.—The State Prison has recently adopted a system of grades for the prisoners there confined.

Rhode Island.—Convicts in the State Prison have the "yard privilege" on Saturday afternoon.

Virginia.—The report of the State Board of Charities and Corrections for the year ending Sept. 30, 1910, shows that 133 whippings were administered during the first 8 months of 1910, as compared with 864 whippings in the first 8 months of 1909.

Women in Prison.—*California.*—The legislature of 1911 passed a law providing that no woman prisoner shall be confined where she will come within sight or hearing of a male prisoner, and making it a misdemeanor for any male person to enter a room occupied by a female prisoner, except in the presence of a matron.

Indeterminate Sentences.—*Indiana.*—The Board of State Charities of Indiana has issued a statement of the workings of the indeterminate sentence law during the last 13 years, showing that 5,690 persons have been paroled from the State Prison, the Indiana Reformatory, and the Woman's Prison during that period. Of the total number only 921, or 26 per cent., have proved delinquent during the period of their parole.

Minnesota.—The legislature of 1911 established a Board of Parole, consisting of the chairman of the State Board of Control, the warden of the State Prison, and a third person to be appointed by the governor and paid from the state treasury. All sentences to the State Reformatory or to State Prison, except for murder or treason, are made indeterminate, and the State Prison is put practically on a reformatory basis. The State Board of Control is given greater latitude in transferring inmates from one correctional institution to another.

Nebraska.—The legislature of 1911 enacted an indeterminate sentence parole law, providing for a parole board of three members appointed by the governor. This board may allow prisoners who have served the minimum term of sentence for the offense committed, if previous history and conduct in the penetentiary justifies it, the privilege of leaving the prison upon their honor. The Board is authorized to detain for the maximum term those whose previous life and conduct mark as constitutional criminals.

Oregon.—Amendments to the indeterminate sentence law make it compulsory upon all courts.

South Dakota.—A new law provides for the parole of life convicts after they have served 18 years.

Wisconsin.—The legislature of 1911 authorized the State Board of Control to parole recidivists (persons who have offended more than once); also to parole life prisoners who have served the equivalent of a 30 years' sentence, less good time (i. e., 16¼ years); under this law five life prisoners have been paroled in two years.

Probation.—The National Probation Officers Association adopted the name National Probation Association at its 4th annual meeting in Boston in June, 1911. The Association has published a directory of probation officers which shows that there are about 900 such officers working under salary in the United States. It has also in preparation a handbook on juvenile court proceeding and probation.

Alabama.—A Negro Probation Association was organized in 1911 at Birmingham, Ala., to care for negro children on probation from juvenile courts.

District of Columbia.—An act of Congress providing for the probation of adults was approved June 25, 1910. The law provides that the courts "shall have power in any case, except those involving treason, homi-

cide, rape, arson, kidnapping, or a second conviction of a felony, after conviction, or after a plea of guilty of a felony or misdemeanor, and after imposition of a sentence thereon, but before commitment . . . . to place the defendant upon probation." The law provides for the appointment of one salaried probation officer for the Supreme Court of the District of Columbia, two salaried probation officers for the Police Court, and for as many volunteer assistant probation officers as occasion may require.

Illinois.—The legislature of 1911 passed an adult probation act which provides that first offenders in certain limited cases, after pleading guilty, or being found guilty, may ask for release upon probation, and shall be so released if the trial judge believes both that their reformation may be accomplished, and the best interests of the community served. Its scope is more limited than the probation laws of New York or Massachusetts. It excludes crimes of violence and other offences of grave importance, on the one hand, and on the other, such trivial offences as are covered by city ordinances. The conditions of probation are designed to safeguard the public and to give the probationer sensible and practical aid. They include giving of bonds or recognizance, regular reports to probation officers, and the like. The probationer may be required to contribute to the support of dependents, to make restitution, or to pay limited court costs. The law provides for one probation officer in each county, and additional officers not exceeding one for every 50,000 inhabitants, the maximum being 21 in Chicago.

New York.—The number of paid probation officers in New York was increased in 1910 from 65 to 105. The increase was chiefly in New York City. Civilians were substituted for 28 police probation officers, and the employment of policemen as probation officers hereafter is prohibited.

In April, 1911, a series of probation conferences was organized by the State Probation Commission for probation officers of Greater New York for discussion and instruction as to their work.

Mayor Gaynor decided in October, 1910, that probation officers, except the chief probation officers, should be subject to civil-service examination in New York.

Texas.—The legislature of 1911 established the suspended sentence applying to all offences except certain felonies.

Virginia.—The General Assembly of 1910 enacted a law authorizing judges, police justices, and justices of the peace, in cities of 40,000 inhabitants and over, to continue the cases of persons charged with vagrancy, drunkenness and non-support and to commit such persons to the supervision of a probation officer.

Wisconsin. — The legislature of 1909 enacted a law authorizing courts to suspend sentence of felons, sentenced to the State Prison or State Reformatory and to place them on probation under supervision under the State Board of Control. More than 100 persons have been on probation under this act. Probationers are compelled to apply their earnings to support their families, if any, and, if not, to pay any indebtedness or to make retribution of property taken in committing the offense.

Convict Labor.—(See also XVI, *Labor Legislation.*) — *Alabama.* — A strong public sentiment has been aroused against the fee system and the convict lease system in the state.

California. — The legislature of 1911 passed a law providing for the "state use system" of labor in state prisons.

Colorado.—Mr. William Thomas, of Denver, State Corresponding Secretary of the National Conference of Charities and Correction reports as follows:

> For several years a system of working convicts on the public highway without armed guards has been followed. The men are put upon honor not to escape, etc.; and 10 days in each month are remitted from their sentence for good work. Escapes have been few. The camps are free and open; the men are housed in tents; there are no evidences of restraint or stripes. The plan has proven a great success, and is being extended. The health and self-respect of the men are restored and

they are better able to meet the world when liberated.

At the State Reformatory men serving the last 30 days of their sentence work on the public roads, and are paid $1.00 for each working day, giving them a small financial start when ready to return to the outer world.

Georgia.—Convicts in Georgia are being employed in building public roads.

Kansas.—A new Kansas law permits the working of county jail convicts upon public roads. The Commissioners of Wyandot County, Kan., are planning to build steel cages on wheels, each to hold 4 bunks and to be hauled to the place of labor, in order to avoid the necessity for transporting prisoners back and forth.

Louisiana.—State convicts are to be employed in building a model road from New Orleans to Kenner.

Missouri.—The legislature of 1911 made provision for the gradual substitution of state account work for contract labor in the State Penitentiary.

Nevada.—As a result of recent legislation, convicts in Nevada are to be put to work constructing roads. The prisoners will live in tents, and be under constant guard. Each convict will receive 25 cents a day, with commutation of sentence.

New Jersey.—The legislature of 1911 passed a bill abolishing contract labor and prescribing the state use plan for convicts. Convicts may also be employed in agriculture, horticulture and floriculture, and "all surplus products of this convict labor are to be disposed of at public sale to the highest bidder." Fifty cents per day is to be paid to the families of convicts. This act is copied largely from the New York statutes providing the state use plan (i.e., the manufacture of goods for the use of the state, counties and cities).

Ohio.—The legislature of 1911 provided for the election of the "state use" system of prison labor. Contract labor in penal institutions has been abolished by the Wertz Law. The contracts in the State Reformatory at Mansfield are now expiring. The Reformatory Board are substituting for contract labor, farming, brick making, and trade teaching. The prisoners have been employed largely on construction and equipment of buildings for the institution.

Oregon.—Prisoners are sent to different state institutions to work. The Governor plans to send a large number to the eastern part of the state without guards, where they will work under a foreman on the new hospital building for the insane.

Rhode Island.—A system of profit sharing between the prisoners and the state on the revenue derived from the prison contracts has been introduced.

Texas.—The legislature of 1911 passed a bill providing for the abolition of the convict lease system and placing the administration of penal institutions in the hands of an expert commission controlled by three members. It calls for the working of convicts only on farms owned by the state. Texas will spend about two million dollars for land and equipment. No contract for convicts will be renewed, and all contracts must terminate within 18 months.

Utah.—The State of Utah, according to a statement of Major M. P. Hackett of Ogden, is going to build an improved highway, 500 miles in length, stretching clear across Utah from Idaho at one end to Arizona at the other. The road is to be built entirely by convict labor in accordance with a late law authorizing such use of felons.

Inebriates.—*California.*—The legislature of 1911 provided that inebriates or drug habitues may be committed to a state insane hospital, term not exceeding three years.

Massachusetts.—A new state hospital and detention colony for inebriates is to be located on a splendid site of about 700 acres, about 25 miles from Boston. The system of caring for drunkenness in connection with the present institution has been greatly developed through the organization of parole and field work.

New York.—The Board of Estimate and Apportionment of the City of New York has authorized the establishment of a detention hospital for the study of inebriates, and an inebriate colony for the detention, treatment and care of inebriates.

Vermont.—The legislature of 1911

provided for the commital of habitual drunkards by the probate court to the care of institutions or individuals for treatment.

STATE REFORMATORIES

Reformatories for Men.—*Colorado.*—The legislature of 1911 passed a new law providing for the sentencing of first offenders between 16 and 18 years of age to the State Reformatory.

Connecticut.—The new State Reformatory at Cheshire, for various classes of male offenders from 16 to 25 years of age, was completed late in 1911. It will accommodate 300. The legislature of 1911 added $230,000 to the $400,000 appropriated in 1909 for buildings.

District of Columbia.—Under authority of Congress a tract of 1,500 acres was purchased in Virginia as a site for a reformatory for young men, within four miles of Mt. Vernon. Opposition having arisen to its location so near the former home of Washington, Congress failed last year to make appropriation for building.

New Jersey.—The legislature of 1911 restored the maximum age of commitment to the Rahway Reformatory from 25 years to 30 years. In order to prevent smuggling, it was made a misdemeanor to send tobacco or liquor to an inmate. The contract shops closed June 1, 1911, under the new state-use law.

The legislature of 1911 passed an "incorrigibility act," affecting inmates of the State Reformatory at Rahway. This act is unique, in that when an inmate, by misconduct in the reformatory, is placed on the incorrigible list, the time during which he remains on that list is added to the maximum term of his detention, and increases the time during which he may be detained by that much. This provision is intended to reach a class of young men who become reckless and presume upon the maximum limit of their sentences. It makes it necessary for them to earn their way out by good conduct.

Washington.—The lock-step has been abolished at the State Reformatory.

Reformatories for Women.—*Alabama.*—The Alabama House of Refuge, a state institution for fallen women opened at Birmingham in 1911 with a state appropriation of $3,000 annually for maintenance. It is controlled by a private board of trustees.

Connecticut.—The legislature of 1911 created a commission to consider the establishment of a state reformatory for women and to report in 1913.

Maine.—The legislature of 1911 referred the bill establishing a women's reformatory to the next legislature for consideration.

New Jersey.—The legislature of 1911 appropriated $20,000 for the purchase of a site for the Women's Reformatory Prison which was created by the legislature of 1910.

New York.—Dr. Catherine B. Davis, Superintendent of the New Bedford Reformatory for Women, reports a study of 1,000 women received at Bedford from 1901 to 1909. (See *Survey*, Feb. 18, 1911.)

The state legislature has made an appropriation for the selection and purchase of a site for a state farm for women.

Ohio.—Governor Harmon has urged the establishment of a reformatory for women to be controlled by women.

PRISON ASSOCIATIONS AND PRISONERS' AID SOCIETIES

The 8th International Prison Congress was held at Washington, D. C., in Nov., 1910. This was the first session of the Congress to be held in America. About 100 foreign delegates were in attendance, representing 32 countries.

Preceding the Congress, 65 foreign delegates were guests of the United States government and were taken in a special train to visit prisons and juvenile reformatories in the states of New York, Ohio, Indiana, Illinois, and Kentucky. The President of the International Congress was Dr. Charles R. Henderson of Chicago. The Congress was divided into four sections.

A National Prisoners' Aid Association was organized in Oct., 1910, as

a federation of about 30 prisoners' aid societies operating under different names in the United States. The Society publishes a monthly bulletin known as *The Review*, which is issued from the office of the Prison Association of New York, 135 E. 15th St., New York City.

The Prison Association of Georgia was organized in the fall of 1910, for the investigation of methods for the prevention and punishment of crime, the reformation of criminals, improvement of prisons, and aid to discharged prisoners.

JUVENILE DELINQUENTS

Charles A. Elwood of the Missouri State University published in *The Survey* of Sept. 24, 1910, the results of an inquiry into the causes of dependency and delinquency in orphan asylums, children's homes, and juvenile reformatories, showing that a very large portion of the inmates of these institutions are the children of divorced, separated, or quarreling parents.

Juvenile Courts.—*Alabama.*—A juvenile court was created in 1911 for Jefferson County including the cities of Birmingham and Bessemer. The act is similar in its provisions to the Juvenile Court Law of Rochester, N. Y.

Arkansas.—The legislature of 1911 enacted a law by which any county in the state may have a juvenile court. A commission has been established for the appointment of probation officers.

California. — The legislature of 1911 passed a new juvenile court law increasing largely the number and salaried probation officers, and extending the age limit of children to 21 years.

Canada. — Montreal in 1911, through an agreement reached between the Provincial government and the city, made provision for a children's court and a detention house.

Delaware.—The legislature of 1911 passed an act establishing a juvenile court. The probation officers will receive a salary of $1,000. The judges will serve without compensation.

Florida.—The legislature of 1911 enacted a comprehensive juvenile court law.

Georgia.—A juvenile court has been instituted in Fulton County (Atlanta) under the juvenile court law of 1908. It is contemplated by the authorities to attempt the placing out of negro juvenile offenders.

Hawaiian Islands.—The territorial legislature made provision for salaries for two probation officers, a man and a woman.

Maine.—A bill for the establishment of juvenile courts throughout the state was defeated in the legislature of 1911, but there is a widespread sentiment in favor of such courts.

Michigan.—The legislature of 1911 amended the juvenile court law, giving the Board of Corrections and Charities authority to force compliance with the provisions of the act, with respect to the investigation of homes for children and their isolation from criminal associations.

Missouri.—The legislature of 1911 enacted a juvenile court law applicable to the six counties having 50,000 inhabitants and over.

Massachusetts.—The Boston Newsboys' Trial Board was established in the fall of 1910 to deal with newsboys under 14 years of age charged with violation of the terms of their licenses. The Board has power to do everything which the juvenile court may do to the offender, except to fine him. The Trial Board is composed of two adults appointed by the School Committee, and three newsboys elected by the licensed newsboys in the Boston schools.

New Jersey.—The legislature of 1911 provided for an increase in the number of probation officers, and an extension of the children's courts and detention homes.

New York.—The number of Children's Courts in Greater New York was increased in 1910 from two to four. At the annual conference of magistrates, including about 40 judges of police and children's courts, resolutions were adopted approving of the discretionary use of the summons system in bringing children before the court without subjecting them to arrest. The conference urged newspapers throughout the state to

refrain from publishing the names and descriptions of children brought before children's courts. It recommended the establishment of a state reformatory for male misdemeanants from 16 to 21 years of age.

North Dakota.—The legislature of 1911 passed a juvenile court law based upon the Indiana law.

South Carolina.—A bill for the establishment of a juvenile court was vetoed by the governor in 1911.

South Dakota.—The juvenile court law prohibits the publication of the name of parties coming before the court.

Tennessee.—The legislature of 1911 created juvenile courts by separate acts for Nashville, Chattanooga and Knoxville. The Knoxville bill is unique for its brevity, as it consists of only eleven brief sections. The law provides that "in all cases of delinquent children, said court shall have a full discretion as to the disposition of such cases." This discretion includes the probation system and the system of parole from institutions. It includes also a provision for the punishment for contributory delinquency.

Virginia.—The General Assembly of 1910 passed an act providing that delinquent minors, under 17 years of age, should be tried, if possible, separate from adults, should not be deemed criminals, should not be treated as such, should not be placed in jail or in the penitentiary, but in suitable homes and institutions, and should be allowed to be released on probation.

Washington.—The legislature of 1911 amended the juvenile court law, providing for a private hearing, an increased number of probation officers, detailed records, supervision of children, and supervision of private institutions boarding children.

Wisconsin.—The new Milwaukee Juvenile Court building, costing $125,000, has recently been opened. The building is of three stories. The first floor is devoted to the Juvenile Court, with waiting rooms and rooms for clerks, attorneys, physicians, records, etc. The second and third floors contain the detention home for the care of dependent and delinquent boys and girls awaiting trial.

Detention Schools.—*Minnesota.*—The legislature of 1911 authorized Juvenile Courts to commit children to detention schools (temporary reform schools) until majority.

New Jersey.—The legislature of 1911 provided for the appointment of boards of trustees of juvenile detention homes. In counties having no detention home or school, the dependent or delinquent child is put in charge of the probation officer and permitted to live at home under his care until the juvenile court disposes of his case.

Juvenile Reformatories.—*Alabama.*—The legislature of 1911 created a State Reformatory for Delinquent White Girls, 12 to 21 years. The Sam Daley Farm for Negro Boys was established in 1911 in Tuscaloosa, a private farm for delinquents.

The legislature of 1911 made appropriations to place the Alabama Industrial School for Black Boys upon a modern basis with ample buildings, industries, etc.

The legislature of 1911 created a Negro Boys State Reform and Industrial School at Mt. Meigs, with ample acreage.

The Mercy Home Industrial School for Girls between 12 and 18 years of age was erected at Birmingham during 1910-11. A state appropriation of $25,000 was made by the legislature of 1911 for a second building; also $4,000 for annual maintenance. The school is controlled by a private board of trustees.

Maine.—The trustees of the State School for Boys and the Maine Industrial School for Girls were consolidated by the legislature of 1911 into the "Trustees of Juvenile Institutions" consisting of five men and one woman with $5 for each day's service.

Michigan.—Increasing emphasis is being laid upon industrial education in the two state industrial institutions, in the "State Public School" for dependent children and in the public school of the state.

Minnesota.—The Minnesota Home School for Girls is nearly completed; when it is completed, the girls' department of the state training school at Red Wing will be abolished.

Missouri.—The State Industrial School for Negro Girls, authorized by the legislature of 1909, has not yet been located.

The St. Louis Municipal Commission on Delinquent, Neglected and Dependent Children made a comprehensive report proposing a plan to move the present industrial school to the country. The legislature of 1911 authorized the establishment of an institution for delinquents, in the country, by the Board of Education. This institution will take the place of the St. Louis House of Refuge.

The rate of support of inmates of the Girls' Reform School was increased from $75 to $120 per year.

New York.—The first contract for the New York State Training School for Boys has been signed and approved by the State Building Commission. The school is expected to accommodate 800 boys in 50 cottages, containing 16 boys each.

North Carolina.—The legislature of 1911 authorized the County of Buncombe (Asheville) to maintain a school of correction for children under 16.

Ohio.—The legislature of 1911 passed a law providing that the Girls' Industrial Home at Delaware shall hereafter be in charge of a "Chief Matron." Heretofore it has been under the charge of a male superintendent. The Board is authorized to appoint four parole agents.

Pennsylvania.—A law was enacted by the legislature of 1911 to allow the Court to place delinquent children under the age of 16 at board, and "to direct that the payment of the board of such child be made by the proper county."

The Allegheny County Industrial and Training School for Boys near Pittsburgh has a total land area of 1,047 acres. The school will be organized on the community plan, the land will be divided into small farms, each having a cottage for 15 or 20 boys.

The County Commissioners of Luzerne County, Pa., have purchased six farms comprising 250 acres, near St. John, as a site for a county reformatory for delinquent boys and girls.

Tennessee.—The general assembly of 1911 appropriated $50,000 "for the erection of suitable buildings and purchase of the material for equipment of the Tennessee Reformatory for Boys."

Texas.—The Seabrook School for Boys, was opened by the authorities of Harris County (Houston) in July, 1910. Arrangements have been made by the authorities at Galveston to board delinquent boys at the Seabrook School. This school is interesting because it was organized without any state legislation or any state appropriation, under the general power of the county to care for delinquent boys coming from the juvenile courts.

The newly organized State Conference of Charities and Correction secured the passage of a law for the regulation of the State Reformatory at Gatesville. Under this law the governor appointed a former deputy sheriff as superintendent.

Virginia.—The Virginia Home and Industrial School for Girls at Bon Air was opened in June, 1910.

CHARITY

SUPERVISION OF CHARITIES

State Boards of Charities.—*California.*—The legislature of 1911 amended the State Board of Charities law, providing for the inspection of all children's institutions receiving state aid, and providing also that child-placing agencies must obtain permits from the State Board.

Colorado.—The legislature of 1911 passed an act requiring public, semi-private or private charitable or correctional institutions to report to the State Board of Charities and Corrections, and fixing a penalty for failure so to do.

Connecticut.—The legislature of 1911 gave the State Board of Charities an appropriation for an agent to place out in family homes and supervise children from the county children's homes.

The legislature of 1911 enacted a

law that no institution or person, unless holding a charter from the state for that purpose, shall care for dependent children under 16 years in any number exceeding four at the same time and place without a license from the State Board of Charities.

Indiana. — The legislature has adopted a uniform law for the adoption of neglected children, under which the State Board of Charities has to give its consent to their adoption.

New York.—The rules of the State Board of Charities have been so revised that more complete control is given to the Board over private institutions. Under the new rules, plans of buildings must be submitted in advance and adequate air space must be provided for hospital patients. Private institutions, heretofore more or less beyond the control of the State Board, are now brought under supervision.

South Carolina.—A bill for the establishment of a State Board of Charities was vetoed by the governor in 1911.

Virginia.—The General Assembly of 1910 enacted a law giving to the State Board of Charities and Corrections supervision of and authority to visit all children over 16 years of age, not legally adopted, placed out in the state, all delinquent minors before commitment to reformatories, paroled inmates of the Laurel Industrial School and the negro reformatory, and all prisoners paroled from the penitentiary.

State Boards of Control.—*California.*—The legislature of 1911 created a State Board of Control of three members to pass upon all claims against the state; to prescribe systems and to examine the accounts of all state departments and state institutions, at least yearly; to approve contracts for supplies for state departments or institutions, grant permits to buy in the open market, or to exceed a legislative appropriation.

Michigan.—The legislature of 1911 defeated a bill for a State Board of Control; also, a bill to establish a central purchasing agency for state institutions.

Ohio.—The legislature of 1911 passed a bill creating a "State Board of Administration" for the management of all state benevolent, penal and correctional institutions, except the Ohio Soldiers and Sailors Orphan Home. The act took effect Aug., 1911.

Miscellaneous Supervisory Boards and Commissions.—*Alabama.*—The legislature of 1911 gave authority to the State Prison Inspector to inspect insane asylums, all camps employing state or county convicts and such other places including mills and factories as may be designated by the government.

Arkansas.—The governor is seeking to have an appointive Board of Directors for the State Penitentiary instead of the present Board of State Officers.

Hawaiian Islands.—The territorial legislature of 1911 appointed a Health Commission composed of five men, to examine into health conditions, to discover how the almshouses can be improved, how swamps can be filled, and how social conditions can be improved.

Kentucky.—In Louisville a Charities Endorsement Committee has been established consisting of six members—three representatives from the Commercial Club and three from the Board of Trade. The committee is an outgrowth from the Associated Charities.

Missouri.—The legislature of 1911 gave permission to the city of St. Louis to establish a Board of Children's Guardians, similar to the county Boards of Children's Guardians in Indiana.

New Jersey.—The legislature of 1911 gave power to the State Commissioner of Charities and Correction to examine the books and records of any private organization receiving funds from the public. Refusal of such examination by any society is a misdemeanor.

New York.—The law establishing a Bureau of Industries and Immigration in the New York Department of Labor, went into effect Oct. 1, 1910. This Bureau will protect the immigrant at the place of landing, will exercise control over the banker, the ticket agent and the padrone, will co-

operate with the education authorities in enforcing compulsory education and providing instruction in English and citizenship, and will assist in directing immigrants into proper lines of industry.

Wisconsin.—The City Council of Milwaukee has established a Municipal Child Welfare Commission consisting of five members appointed for three years, "to investigate the problem of infant mortality and all conditions surrounding child life in the city." The sum of $5,000 yearly is appropriated.

PUBLIC CARE OF THE POOR

Pensions and Gratuities.—*Indians.*—Ex-Commissioner Francis D. Leupp in his book *The Indian and His Problem*, New York, 1910, declares that all gifts of the government to the Indians, whether by treaty stipulation or otherwise, have resulted in deplorable conditions. He believes that it is best to accept Judge Dundy's decision that the Indian is a person, and make him a person, exactly as other citizens are.

Georgia.—The legislature of 1910 granted a pension to all Confederate veterans and widows of veterans not possessing more than $1,500. Widows must have married prior to 1870.

Illinois.—The legislature of 1911 passed an act relating to dependent and neglected children, and providing that:

> If the parent or parents of such dependent or neglected child are poor and unable to properly care for the said child, but are otherwise proper guardians and it is for the welfare of such child to remain at home, the court may enter an order finding such facts, and fixing the amount of money necessary to enable the parent or parents properly to care for such child, and thereupon it shall be the duty of the county board, through its county agent or otherwise, to pay to such parent or parents at such times as said order may designate, the amount so specified for the care of such dependent or neglected child, until the further order of the court.

Missouri.—The legislature of 1911 passed an act permitting the County Court of Jackson County to pay pensions to widows or to the wives of convicts with children under 14 years of age, on recommendation of the Judge of the Juvenile Court. The county may appropriate not exceeding $12,000 per year. The allowance to each woman must not exceed $10 per month for one child, and $5 per month for each additional child under 14 years, and the allowance must insure that the mother will be able to remain at home with her children.

New Jersey.—The legislature of 1911 passed an act revising and codifying the poor laws of the state. This enactment culminated five or six years' work of a poor-law commissioner.

The legislature of 1911 established a commission on old-age insurance and pensions, consisting of five unpaid members, whose duty it is to advise employees and employers, municipalities and counties regarding the establishment of systems of old age insurance and pensions. The commission is also to investigate existing systems.

Virginia.—The General Assembly of 1910 enacted a law establishing county and city boards of poor commissioners, composed of the superintendent and overseers of the poor of the several counties and the superintendents and poor committees of the cities, which boards are to meet at stated times during the year to discuss the condition of the poor, devise ways and means of providing for those unable to care for themselves and receive, record, and preserve itemized reports of the number of persons aided and the amount of money expended.

Municipal Lodging Houses.—*Minnesota.*—In Minneapolis, a municipal lodging-house has been established under control of the Board of Corrections and Charity.

Public Subsidies to Private Institutions.—*Pennsylvania.*—The officers of poor districts in all counties, are authorized by the legislature of 1911 "to make an appropriation, yearly, to incorporated associations maintained by gifts and voluntary contributions, and formed for the purpose of assisting, relieving, and giving medical care and attention to the poor, injured, or sick." Another act relat-

ing to tuberculous patients provides that county commissioners may appropriate not to exceed $10 per week for indigent patients cared for by a duly incorporated sanatorium.

PRIVATE CARE OF THE POOR

The American National Red Cross.—At the Annual Meeting of the American National Red Cross, Dec. 6, 1910, it was reported that during the preceding year the American National Red Cross had assisted in the relief of sufferers from the storm at Key West, Florida, the mine fire in Illinois, mine explosions at Malaga and Calais, Ala., and forest fires in Idaho, Montana, Washington and Minnesota. In all 506 lives were lost, and 7,500 people required immediate help. The American National Red Cross expended $196,000 in relief and $218,000 more was expended in conjunction with it, making a total of $414,000 in the United States by the organization or through its leadership. It contributed also to the sufferers from floods in France, Servia and Japan and from the earthquake in Costa Rica. The total contributions to foreign disasters were 66,500, making the total disbursements for the year amount to $480,-500. Thirty-six states have thus far organized under the new plan with a board of representative men in each state who are to be custodians of Red Cross funds and advisors in the conduct of relief measures within their states. Fifteen charity organization societies have been appointed institutional members under pledge to lend trained social workers to the Red Cross for executive work in administration relief. During the year such service was rendered by the Atlanta, Chicago, Cincinnati, and Minneapolis Societies. (*Survey*, xxv 14, Dec. 31, 1910.)

Relief in Mine Disasters.—In *The Survey* of Sept. 10, 1910, Dr. Graham Taylor describes the methods pursued in relief after the three great mine disasters of 1907 and 1909, in which 858 breadwinners left 1,958 dependents, and about $500,000 was disbursed by trained agents after thorough study of the situations by numerous coöperating bodies.

Charity Organization Societies.—*Maryland.*—During the past year a federation of secular charities has been organized in Baltimore, which includes practically all of the charitable organizations in Baltimore except the church charities.

Minnesota.—The Amherst H. Wilder Charity is to build a United Charities Building for the use of philanthropies of the city of St. Paul.

Ohio.—Cleveland has organized a charity clearing house, which has been in complete operation during the past year and is recognized by the benevolent agencies as a valuable change in methods. There has also been organized in Cincinnati a Conference of Charities and Philanthropies composed of two delegates from each charitable and philanthropic institution. Columbus has organized the Central Philanthropic Council, which holds monthly sessions and has brought about a better understanding among the philanthropic agencies of the city.

Pennsylvania.—In Philadelphia, a number of philanthropic agencies have established a Joint Registration Bureau to record the work of the philanthropic agencies. This bureau replaces one formerly maintained by the Society for Organizing Charities.

Tennessee.—In Nashville a central council has been formed for the charities of the city, with a view to securing a city survey.

Washington.—Associated charities have recently been organized in Bellingham, Ellensburg, Everett and North Yakima.

CARE OF THE INSANE

California. — The asexualization law passed in 1909 has been used in the insane hospitals on both sexes and satisfactory results are reported. The law is applicable also to the State Home for Feeble-Minded and the two State Prisons.

The legislature of 1911 passed a law providing for voluntary admission of insane patients to state hospitals.

Illinois.—The State Board of Administration and the State Charities Commission presented figures to the legislature of 1911 showing that dur-

ing the decade 1900 to 1909, the number of insane and feeble-minded in the state charitable institutions in Illinois increased from 6,708 to 12,722, an increase of 6,014, or 90 per cent.; but during this period the additional buildings provided for only 2,500 additional patients, a shortage of 3,514. They asked for an appropriation of $400,000 with which to enlarge and equip the Cook County Hospital for the Insane, which was taken over July 1, 1911, as a state institution.

Indiana.—Indiana has a new hospital for the insane, with a capacity for 1,100 patients, built on the cottage plan. The legislature of 1911 provided for a hospital for insane criminals, which is to be built within a year.

Maine.—The legislature of 1911 consolidated the trustees of the state institutions for the insane and the feeble-minded into one board of trustees consisting of three men and one woman. The governor is a member *ex-officio*. Trustees receive expenses only.

Michigan.—The State Psychopathic Hospital at Ann Arbor conducted last year a course of instruction for physicians of the state asylums for the insane. The medical director of the Psychopathic Hospital has found that 64 per cent. of the patients in the state asylums had among their ancestors or families, either insanity, apoplexy, paralysis, psychopathic abnormalities or chronic alcoholism.

New Jersey.—Provision was made by the legislature of 1911 at the Trenton State Hospital for the Insane, for insane criminals and criminal insane.

New York.—The State Charities Aid Association of New York has published a valuable tract by Homer Folks and Everett S. Ellwood, entitled "Some Facts as to the Extent, Causes and Prevention of Insanity." Among the causes of insanity are enumerated immoral living, alcohol and other poisons, physical diseases, mental habits, and heredity.

Ohio.—The law requiring guardians and near relatives of patients in State Hospitals to pay for their support, has met with very little opposition.

Oregon.—Under the initiative law the people of the state voted to establish a branch asylum for the insane in the eastern part of the state. The last legislature made an appropriation for the building and its maintenance.

South Dakota.—The legislature of 1911 passed a law whereby it is made a felony for any state board or officer to design, construct or use any building for the permanent care of the insane, not fireproof. Wood may be used only for doors, sashes, frames, furring, and furniture. It is made a misdemeanor to keep an insane person in a bedroom containing less than 60 sq. ft. of floor space, or in a dormitory with less than 56 sq. ft. of floor space per bed. Such floor space must not include corridors, bath rooms, lavatories, dining rooms or kitchens. Dormitories must contain at least 650 cu. ft. per patient, and there must be a constant circulation of at least 1,800 cu. ft. of air hourly per patient. Single bedrooms must have one easily opened outside window, and dormitories at least three. Day rooms for patients are required to have ventilation equivalent to night dormitories. For sick patients occupying rooms day and night, these facilities must be increased 50 per cent.

Utah.—An educational department was established last year in connection with the "Mental Hospital." The legislature provided for a separate building and the school began with 45 pupils. It is to be carried on as an industrial school.

Virginia.—The General Assembly of 1910 made provision for the criminal insane by the erection of strong, suitable buildings at the Central and Southwestern State Hospital.

Washington.—Complete industrial departments have been installed at the State Insane Asylum.

CARE OF EPILEPTICS

Connecticut.—A farm has been purchased at Mansfield, Connecticut, for the State Colony for Epileptics authorized in 1909, and a superintendent has been appointed.

New Jersey.—The State Village

for Epileptics at Skillman has available $317,000, which will considerably more than double the capacity of the village.

Virginia.—The Virginia State Epileptic Colony for Insane Epileptics, situated near Lynchburg in Amherst County, was opened in May, 1911.

CARE OF THE FEEBLE-MINDED

Schools and Homes for Defectives.—*Colorado.*—The new State Home for Defectives costing $300,000, will be completed in 1911, and will receive many feeble-minded persons now cared for in poorhouses, jails, penitentiaries and insane asylums.

Delaware.—The legislature of 1911 appropriated $500 "for securing a census of deaf mutes, feeble-minded and defective children of the state."

New York.—Letchworth Village at West Haverstraw, N. Y., an institution for feeble-minded children, was opened in 1911.

North Carolina.—The legislature of 1911 created a School and Home for the Feeble-Minded, and authorized a bond issue of $60,000 therefor. The school has been located at Kinston, N. C., on a farm of 972 acres. The trustees hope to open it in 1912.

Pennsylvania.—The legislature of 1911 established a commission "to take into consideration the number and status of feeble-minded and epileptic persons in the Commonwealth, and the increase of such persons, and to report to the General Assembly at its next session, plans for the segregation, care and treatment of such defectives."

Virginia.—The General Assembly of 1910 passed a law directing the State Board of Charities and Corrections to ascertain the facts concerning the weak minded, other than insane and epileptic; also, the indigent cripples and deformed in the state.

Defectives in Insane Asylums.—*Colorado.*—In his message to the legislature of 1911, Gov. Shofroth recommended the removal of mental defectives from state insane asylums, and the establishment of a separate institution for them.

Training of Teachers for Backward Children.—*New Jersey.*—A Training School for Teachers of Backward Children was opened at Vineland, N. J., in Feb., 1911, with opportunity for practice in a model school.

Defective Delinquents.—*Massachusetts.*—An important report on the defective and delinquent and the conditions producing them has been made by a commission appointed for that purpose.

New Jersey.—Examination by the Binet tests showed that 46 per cent. of the inmates received at the New Jersey State Reformatory for Young Men last year were mentally subnormal. Inmates are 16 to 25 years old, but the mental age for nearly a majority was below 12 years. The reports showed that 28½ per cent. of the prisoners belonged to the hopelessly defective or feeble-minded delinquent class, while 17½ per cent. were possibly capable of development into normal. (*The Review*, April, 1911, p. 2.)

Dr. Henry E. Goddard of Vineland estimates that 25 per cent. of delinquents are defective. All mental defectives would be delinquents, in the very nature of the case, did not some one exercise some care over them. (Report of Committee on Law Breakers, National Conference of Charities and Correction, June, 1911.)

New York.—The Prison Association of New York has appointed a committee for the study of mentally deficient criminals. A letter to the committee from Dr. Frank Christian, Senior Physician of the Elmira State Reformatory, stated that an examination showed that 39 per cent. of the Elmira prisoners were mentally defective, and 70 per cent. were below a normal physical standard.

SOCIAL SERVICE

Hospital Social Service.—In *The Survey* for Sept. 7, 1911, Garnett Isabel Pelton states that hospital social service has been established in 43 hospitals in the United States.

Social Service in Churches.—The American Unitarian Association, in 1911, appointed a Commission to define the proper social work of the church.

The Baptists, Congregationalists, Episcopalians, Methodists, Baptists and Presbyterians have established local federations of churches with a social service programme. At the General Convention of the Protestant Episcopal Church in the fall of 1910, its joint Commission on the Relations of Capital and Labor submitted a report accepting social service as a part of the work of the church. A joint Commission on Social Service was appointed, consisting of five bishops, five presbyters and five laymen, "to study and report upon social and industrial conditions, to coördinate the activities of the various organizations existing in the church in the interests of social service, to coöperate with similar bodies in other communities, to encourage sympathetic relations between capital and labor." Resolutions were adopted unanimously calling "for better enforcement of the laws for the protection of children," and to make laws forbidding the work of messenger boys and newsboys under 18 between the hours of 10 P. M. and 6 A. M. (*Survey*, Nov. 5, 1910.)

Schools for Social Workers.—Two schools for social workers were opened in Oct., 1910—the Philadelphia Training School for Social Work, and the Wisconsin Institute of Municipal and Social Service.

The Philadelphia school is an enlargement of the scope of the School for Children's Workers which was maintained by the children's agencies of Philadelphia for the two preceding years. The Faculty is composed entirely of teachers and social workers from Philadelphia and vicinity. The Wisconsin school is a part of the University Extension work of the Wisconsin State University. The work of the first year was general and not technical, but it is expected it will ultimately be so organized as to provide training for employees of the public institutions of the state.

There are now 6 schools for social workers in the United States: (1) The New York School of Philanthropy, organized in 1898; (2) The Chicago Institute of Civics and Philanthropy, organized in 1903; (3) The Boston School for Social Workers, organized in 1904; (4) The St. Louis School of Social Economy, organized in 1907; (5) The Institute of Municipal and Social Service in Milwaukee, organized in 1910; and (6) The Philadelphia Training School for Social Workers, organized in 1910.

Research departments are maintained in connection with the schools of New York, Chicago, Boston and St. Louis, by the assistance of the Russell Sage Foundation.

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XVIII. PUBLIC HEALTH AND HYGIENE

WALTER WYMAN *

WORLD MOVEMENTS OF EPIDEMIC DISEASES

The ease of intercommunication which characterizes modern civilization greatly facilitates the spread of epidemic diseases. Were it not for the constant vigilance of sanitary authorities and the prompt enforcement of suppressive and eradicative measures, it would be difficult to form an adequate idea of the devastation which would result from their dissemination. As it is, the havoc wrought by diseases of this character throughout the world is sufficiently impressive, and suggests forcibly the results which would have followed their unrestrained extension.

PLAGUE

Endemic Centers.—Plague is believed to be permanently endemic in certain localities in Central Asia. Although some of the most destructive epidemics in history have been due to this disease, prior to 1894 it had long been absent from the civilized world. Subsequent to that date, it began to appear again in various places which probably derived their infection from the endemic areas mentioned. Since its reappearance, its spread has been gradual, but continuous, with the result that the disease is now pandemic. In this way numerous secondary foci have been established in which the rodent as well as the human population in infected.

Transmission by Rodents.—In this connection, it is well to emphasize that, even though the disease may apparently die out in any infected community, as long as plague-infected rodents exist, the disease is continuously propagated and thus remains endemic in the affected area. Under these circumstances, the conditions permitting a recrudescence of the disease among human beings are ever present.

Distribution of Human Cases.—During the past year human cases have been reported in the following countries throughout the world: Arabia, Azores, Brazil, British Egyptian Sudan, Chili, China, Ecuador, Egypt, England, German East Africa, Great Britain, Hawaii, India, Indo-China, Japan, Java, Mauritius, Morocco, New Caledonia, New Zealand, Persia, Peru, Portugal, Portuguese East Africa, Russia, Siam, Straits Settlements, Trinidad, Tunis, Turkey in Asia, United States, Venezuela and Zanzibar.

England.—Four cases of pneumonic plague were reported at Freston, in East Suffolk, in Oct., 1910. It also appears that, during the winters of 1906-7 and 1909-10 there had been outbreaks of a disease, not recognized at the time, but which, in the light of a retrospective diagnosis, seems possibly to have been plague. As a result of the diagnosis of human plague, an examination of the rodents of the locality was begun and a number of infected rats and rabbits were discovered.

Up to the present time it has not been possible to ascertain precisely how the disease was introduced, but, in view of the extensive commercial relations of the British Empire with

* This article was prepared under Dr. Wyman's supervision before his death on Nov. 21; it has been revised to date by Dr. J. W. Schereschewsky, of the Public Health and Marine Hospital Service.

plague-infected countries, it is thought that the infection was brought by rats arriving on grain-laden vessels from such countries. The report on this outbreak states that there are grounds for believing that plague has been endemic in Suffolk for several years.

Plague-infected rats have also been found along the waterfront, in the neighborhood of the docks, in London, but it is not known how far investigation has developed the extent of the rodent infection.

Manchuria.—An unusual and virulent outbreak of the pneumonic type of plague occurred in Manchuria, and, to a lesser extent, in the contiguous provinces during the early part of the year. The disease was first observed at Manchouli by Russian railway officials, in the persons of two Chinese ill with pneumonic symptoms. One died during the night and the diagnosis of plague was made by the post mortem appearances and bacteriological examination. The following day nine Chinese were found dead of the disease. With a rapidity unusual for plague, the disease spread until, by March 29, 1911, 42,756 deaths from the disease had been reported in Manchuria. The infection was so virulent that there were few instances of recovery.

Plague is believed to be endemic in Manchuria in a rodent, the tarbagan, a species of marmot, which is hunted for its fur. As the first cases were observed among tarbagan hunters, this animal is thought to be the source of the Manchurian epidemic. It may be noted, in this connection, that while, in all probability, the bubonic type of the disease results from the transmission of plague from rodents to man, through the agency of fleas, the pneumonic type, with equal probability, is directly transmitted from man to man.

In Fuchiatien, Manchuria, 1,100 bodies of persons dead from plague were burned on Jan. 30, 1911, 350 on Feb. 1, and 2,100 on Feb. 3. A large number of houses in which cases had occurred, were also burned, including one entire section of the town. According to the available accounts of the Manchurian epidemic, instances are narrated where the populations of certain Chinese villages were completely exterminated.

CEREBRO-SPINAL MENINGITIS

Greece.—A well-marked epidemic of cerebro-spinal meningitis occurred in Greece. The disease is said to have been first observed in that country in 1843, but up to 1868 only sporadic cases of the disease occurred. A marked outbreak was then observed, during the winter of 1868-9, after which a gradual subsidence was noted, although isolated cases were reported from time to time. Since the year 1881, however, the disease seems to have been more or less endemic, with marked recrudescences in the winter and spring months. In Nov., 1910, an epidemic broke out in Athens and, from that point, invaded the whole country. The height of the epidemic was reached in Feb., 1911, and was then followed by a gradual subsidence. In order to prevent the importation of the disease to America, officers of the Public Health and Marine Hospital Service were stationed in Greece during the spring and summer.

YELLOW FEVER

During 1911.—During the past year there have been no cases of yellow fever reported in the United States, and no severe epidemic of the disease has been recorded in any other country. This is doubtless the fruit of the precise knowledge now possessed of the modes of transmission of the disease and the increased attention paid to specific methods by which its dissemination is prevented. The disease, however, has been present at some time during the year in Brazil, Ecuador, Central America, Mexico, the West Indies, and Africa, and in October a case was reported from Honolulu in a quarantine guard who had been stationed on the steamship *Hongkong Maru* after arrival from Manzanillo, Mexico, with a convalescent aboard.

Endemic Centers.—It has recently been shown that yellow fever has existed on the West African Coast for years, and has been one of the prime

causes of mortality among foreign residents on the African Gold Coast. Hitherto the disease has been confounded with malarial fever and other diseases. The disease is endemic in Western Africa, and the native population is largely immune. There are excellent grounds for believing that the disease has been present in Western Africa for at least the last century. The natives who have gradually acquired immunity, suffer but little, but the white population furnish many victims. Nevertheless, the outbreaks have not been extensive by reason of the small number of non-immune white residents in any of the foci where the infection is endemic.

CHOLERA

Cholera seems to be endemic in certain portions of Asia, from which it spreads periodically to other portions of Asia and occasionally to other parts of the world. In this way temporary endemic foci are established which endure for a period depending upon the local, climatic and sanitary conditions and the eradicative measures employed. For several years past, cholera has been endemic in Russia, and small localized outbreaks have made their appearance in other countries in Europe. During 1911 there have been outbreaks in the following European countries: Austro-Hungary, Bulgaria, France, Germany, Greece, Roumania, Servia and Turkey, besides being present in epidemic form in Italy.

In Asia the disease has been present in Arabia, China, Ceylon, Federated Malay States, India, Indo-China, Japan, Java, Korea, Manchuria, Persia, Siam, Straits Settlements, Sumatra and Turkey. Among the insular possessions of the United States, it has been present in the Philippine Islands and a small outbreak occurred at Honolulu.

Russia.—Epidemics of cholera have been occurring in Russia for several years, except in the winter months. In 1908, 17,000 deaths from this disease were officially reported, and in 1909, 28,000. In 1910, from May 8 to Nov. 16, 216,796 cases with 100,982 deaths occurred. The disease then became quiescent during the winter, but reappeared in the spring with the result that from April 21 to Sept. 11, 1911, 1,045 cases with 579 deaths were reported.

Italy.—On Aug. 17, 1910, cholera was reported present in the provinces of Bari and Foggia. The infection is thought to have been imported by a band of Russian gypsies from Batum, who landed at Brindisi and proceeded by rail to Trani, the place which has been regarded as the primary focus of the epidemic. There is considerable doubt as to whether any of the party was actually ill, but it has been determined that they washed clothes in vessels used in drawing water from a well. In due course of time cases of a disease appeared, which were at first reported as "grave gastro-intestinal disturbances." Later the correct diagnosis of cholera was made.

The disease gradually spread to the south and eastern parts of Italy and invaded Sicily, where it continued prevalent until the winter months. The epidemic subsided in Jan., 1911, but reappeared in June. The resulting epidemic has been far more extensive than that of the preceding year. Up to Nov. 1, 14,803 cases with 5,661 deaths were recorded.

EPIDEMIC AND INFECTIOUS DISEASES IN THE UNITED STATES

PLAGUE

California.—During 1911 plague among the ground squirrels in California continued to be found, and three human cases were reported during the year, one in Contra Costa County, one in Alameda County and the other in San Joaquin County. The source of the infection, in all probability, was infected ground squirrels.

Suppressive Measures.—Since the important observation was made by Blue in 1908 that not only rats but ground squirrels (Citellus), in the case of California, serve as extra-human hosts for plague, the plague

suppressive measures in the United States have been conducted on the following plan:

1. The destruction of known foci of rodent infection.

2. The determination of new and hitherto unknown foci of infection in order to ascertain at the earliest possible moment, its entire extent.

3. The general eradication of squirrels.

The first two steps in this plan of campaign were undertaken by the Public Health and Marine Hospital Service, and the third in coöperation with the state of California under the direction of the same Service.

The chief efforts were directed toward discovering new foci of rodent infection and toward creating squirrel-free zones around the cities of San Francisco, Oakland, Alameda, Berkeley and vicinity.

Rodent Extermination.—Further investigations were also made with a view of ascertaining whether the rats of the communities in question still remained free from plague infection. As a result of the latter investigation, no cases of plague, human or rodent, have been found to have originated in the cities of San Francisco, Oakland, Berkeley or Alameda in the past year. By reason of the accompanying sanitary inspection, enforcement of rat-proofing ordinances, the destruction or efficient protection of all substances serving as a source of food for rats, the rodent population of San Francisco has been reduced and maintained at the lowest level ever reached.

During the fiscal year 1911, in the cities of San Francisco, Oakland, and Berkeley, 126,303 rats were trapped, of which 115,257 were examined and none found plague infected. In Los Angeles 23,761 squirrels were killed, of which 21,932 were examined and found negative for plague. In addition to the examination of rats, 126,125 ground squirrels were killed and examined, of which 55 were found to be plague infected. The total number of rodents examined was 219,655.

Results.—The investigation for the detection of new foci of rodent plague has been extended to embrace 45 counties of California and parts of Nevada, Arizona and Oregon, with the result that new foci of infection have been found in Merced County. Originally a total of 12 counties were found to be infected, and during the past year the infection has been found only in 9 counties. The area of infection has therefore apparently been lessened.

The principle which has been followed in the eradication of squirrel plague has been as follows: the establishment of squirrel-free zones around infected areas, thus confining the infection, followed by the extermination of the rodents in the areas isolated in this manner. A summary of the work in plague eradication shows that the following results have been accomplished:

1. Through the maintenance of squirrel-free zones the re-infection of cities has been prevented.

2. The infected areas are believed to have been definitely delimited.

3. Plague has apparently been eradicated from three counties, San Francisco, Los Angeles and San Luis Obispo.

4. In addition to the counties investigated during the previous year, 22 additional counties in California, 1 in Oregon and 3 in Nevada have been scrutinized with negative results.

5. Possible routes by which infection could spread to the East have been found by reason of the discovery of ground squirrels in certain of the passes of the Sierra Nevada Mountains.

6. Incidentally the sanitary condition of the cities in which plague-suppressive measures have been applied, has been materially improved.

7. By the destruction of squirrels on a large scale, not only is the establishment of endemic foci of plague being averted but great economic benefits, also, have resulted to farmers, ranchers and land owners.

Seattle, Wash.—Plague-suppressive measures were directed, as in the past, against the rodent population. No plague-infected rats were found until Aug. 26, 1911, when one was found, followed by two others on Sept. 21 and 22. Additional suppressive measures were at once instituted.

CHOLERA

New York.—In Sept., 1910, one case, and in November, three cases of cholera were apprehended on two ships arriving at the New York quarantine station. No other cases of cholera arrived until June, 1911. On June 6, a passenger died of cholera on board the steamship *Berlin* four days out of Naples. In all, from June 14 to Aug. 15, 1911, 23 cases of cholera developed either on board ships from cholera-infected ports, while en route, or among immigrants and members of their crews while detained at quarantine.

In addition to these, one case developed at Brooklyn, N. Y., and one at Auburn, N. Y. Both of these cases occurred in recently arrived immigrants who had been under observation at quarantine for at least seven days. One case developed on Staten Island, N. Y., in the person of an employee of the quarantine station, one case in New York City in an alien who had come from Boston, Mass., a few days previously, and one case in Boston in a woman who had been associated with recently arrived immigrants. In addition to the above, 27 cholera-bacillus carriers were apprehended on arrival at New York.

Special Measures of Exclusion.—At no time during the past 25 years has the danger of the introduction of cholera in epidemic form into the United States been so imminent, in view of the pandemicity of the disease in Europe and the constant westward tide of immigration.

The following line of defense was adopted:

1. The isolation and detention, under careful medical observation for a period of five days of all prospective passengers at infected ports of foreign embarkation.

2. The disinfection of personal effects.

3. The destruction of all food stuffs and beverages found in the possession of passengers.

4. The careful medical supervision of all passengers en route for the United States, together with the prompt isolation and subsequent report of all illness observed.

5. The further detention under medical supervision at quarantine at the port of arrival, of all passengers from infected ports.

6. The supplementary medical inspection at immigrant stations of all aliens released from quarantine.

7. The notification of state health officers and, in the case of large cities, such as New York, Chicago, and Philadelphia, of the municipal health officers of the names and ultimate destination of passengers from infected areas, en route to the territory under their supervision.

Cholera Carriers.—In addition to the precautions just enumerated, one other means of protection was added, which, in view of its employment for the first time on so extended a scale, warrants a reference in somewhat greater detail. It has been shown that persons from cholera-infected zones, although exhibiting no sign of disease, may harbor the germs of cholera in their intestinal tracts, and thus be the means of introducing the disease into non-infected territory. From this it is evident that the quarantine measures previously described, while insuring the detection of suspicious cases of illness, are powerless to detect the bacillus carrier.

The additional precaution has been therefore adopted of detaining passengers from infected ports until it had been determined by bacteriological examination which of them if any, were carriers of the disease. Upon the discovery of a bacillus carrier such person is detained at quarantine and not allowed to proceed until it has been determined bacteriologically that he no longer harbors cholera germs. By the observance of this precaution, intercourse with cholera-infected countries may still be maintained and yet a degree of protection secured which, in former years could be obtained only by the prohibition of all commercial relations.

By this method the 27 carriers mentioned above have been detected at ports of arrival in the United States. The examination for cholera bacillus carriers among immigrants to America, has been instituted by the Italian authorities, and, at Pa-

lermo and Naples, up to Sept. 22, 1911, 9,557 persons had been so examined, as well as a few at Genoa, with the result that 41 "carriers" were detected.

Immigrants from Russia are examined in similar manner by the German sanitary authorities at the control stations along the Russian frontier. There has thus been imposed an additional barrier to the importation of cholera by Russian immigrants into the United States.

SMALLPOX

Mild and Virulent Infection.—Smallpox has been unduly prevalent in the United States. In 1910, 30,352 cases with 415 deaths were recorded, and during the past year cases have been reported from many localities in 35 states and the District of Columbia.

Although the relative proportion of deaths to cases connotes a disease of extreme mildness, yet a considerable increase is evident in the relative number of deaths.

Most of these deaths, however, have occurred in outbreaks in which the disease has presented its usual severity. The mildness of the prevalent form of the disease, presents a condition of great interest, the significance of which has already been pointed out by Trask. (Public Health Reports, June 23, 1911.) There have been similar mild outbreaks in Western Africa, in the West Indies, in parts of Brazil and in Canada.

In Brazil the virulent type of smallpox is also present. It is of interest to note, in this connection, that infection contracted from the mild cases, remains mild, while the disease, when derived from virulent sources, remains virulent, presenting a case of mortality rate of from 15 to 40 per cent.

The two types of smallpox coexist in the United States. Certain local outbreaks have been characterized by virulency and, almost without exception, the resulting secondary cases have conformed to the primary in virulence. The widely prevalent type of the disease, however, has been mild, as previously noted, and seldom have cases of the graver form been secondary thereto. The incident mortality has been usually less than 1 per cent., and, in some instances, only 0.5 per cent. On the other hand, in every outbreak of the virulent type, the case mortality rate has not been less than 15 per cent.

The explanation which has been advanced that the prevailing mildness is due to the results of vaccination or the inheritance of partial immunity from vaccinated parents and grandparents is unsatisfactory in view of the fact that the practice of vaccination in the United States to-day is by no means generalized sufficiently to support this theory. The low mortality which has hitherto characterized the disease should not be ascribed therefore to adequate protection by vaccination, but to the purely fortuitous circumstances of the mildness of the infection.

Result of Vaccination in the Philippines.—New additions are furnished to the voluminous mass of evidence already accumulated in support of the efficiency of vaccination as a smallpox prophylactic by the results of the application of this measure in the Philippine Islands. (V. G. Heiser, Public Health Reports, March 10, 1911.)

While the islands were under Spanish domination it became necessary every year, during the dry season, to erect large temporary hospitals in Manila to care for the numerous smallpox cases. During the last five years there have been no deaths from smallpox in Manila in the case of persons successfully vaccinated within that time, nor since June, 1909, have there been any deaths whatever from smallpox in that city.

Since 1907, when the vaccination of the 1,000,000 inhabitants of the six provinces near Manila had been completed, no one has died from smallpox who had been vaccinated with success, and only a few scattered cases have occurred. Yet, prior to this time, some 6,000 persons died annually from smallpox in the same area. In the province of Cebu, 3,000 to 4,000 deaths from smallpox were annually reported prior to 1905. The systematic vaccination of the 650,-

000 inhabitants was then undertaken. In 1907 there were only 94 deaths, and in 1908, 84 deaths from this disease.

LEPROSY

Besides being endemic in Hawaii and in our Philippine possessions, during the past year cases of leprosy have been reported from the following states: Florida, Idaho, Kansas, Massachusetts, North Dakota, Oklahoma, Pennsylvania, Rhode Island and Utah.

Successful Cultivation of the Bacillus of Leprosy.—Although the bacillus which is constantly found associated with the lesions of leprosy was discovered by Hansen over 30 years ago, all attempts to cultivate it artificially and thus establish its causal relationship to the disease have been fruitless until Clegg found a method of artificial cultivation in 1909 by symbiosis with amœbae and the vibrio of cholera.

Clegg's results have been apparently confirmed by the experiments in 1911 of Currie, Clegg and Hollman at the U. S. Leprosy Investigation Station in Hawaii, and by Duvall at New Orleans. Nine strains of acid-fast organisms were experimented with by the former workers, one being the grass bacillus of Moeller, one the bacillus *Margarine*, one the *Smegma* bacillus and six different strains of *Lepra* bacilli. Only slight cultural differences were noted in any of the nine strains investigated. The serum of a horse, however, which had been immunized to the bacillus *Lepra*, agglutinated all the strains of the *Lepra* organism worked with, but failed entirely to agglutinate the other three organisms. Fields of great interest in the study of the transmission and the serum therapy of leprosy are opened up by this discovery.

TUBERCULOSIS

Death Rate.—Tuberculosis still continues to head the list of causes of death, 86,309 deaths being due to this disease in 1910, in the registration area of the United States (corresponding to 58.3 per cent. of the total population). These are the latest figures available for publication. Although the number of deaths in the registration area is somewhat higher than in 1909, the death rate per 100,000 has decreased from 167.5 in 1909 to 160.3 in 1910.

The Prevention Campaign.—The improvement in the death rate must be ascribed to the vigorous campaign against this deases that has been carried on in recent years. Among the agencies engaged in this campaign the National Association for the Study and Prevention of Tuberculosis deserves special mention. From the report of its executive secretary, it appears that during 1911, press bulletins on tuberculosis were freely sent out to 7,300 papers reaching three or four million readers. Two traveling car exhibits were also touring the South and West. Various religious denominations lent their aid during the year, a remarkable instance of this coöperation being the circumstance that, on April 30, 1911, 50,000 sermons on tuberculosis were preached in various churches in the United States. The force and extent of this movement is further emphasized by facts contained in the last "Tuberculosis Directory" published by the Association mentioned. The number of dispensaries and clinics for the treatment of tuberculosis has increased from 18 in 1905 to 342 in 1911; the number of sanitoria has likewise increased from 111 to 422.

The number of associations for the prevention of tuberculosis rose from 18 in 1905 to 511 in 1911. With the exception of Alaska, Idaho, Mississippi, Nevada, South Dakota, Utah, Vermont and Wyoming, such associations exist in varying numbers in every state, territory and dependency of the United States.

Legislation.—The awakening of public opinion to the necessity for restricting the ravages of this disease has resulted in the enactment not only of laws whose object it is directly to control tuberculosis by such means as the registration of cases, creation of sanitoria, disinfection of premises, etc., but also of others indirectly effective, relating to the sanitation and ventilation of

factories, regulation of housing, abolition of public drinking cups, prohibition of promiscuous expectoration, medical inspection of schools, etc., which must necessarily reduce morbidity from tuberculosis by improving sanitary conditions.

Status of Knowledge Concerning Tuberculosis.—The knowledge possessed of tuberculosis is still defective from various standpoints, notably of the various modes in which infection may be acquired and the way in which immunity to tuberculous infection is established. Our present knowledge, however, is quite sufficient to constitute a reliable working basis upon which to formulate methods of prevention.

In the main, it seems to have been established that, while in the case of adults, the transmission from human sources is the most usual, in infants, on the other hand, bovine sources of infection play an important part. From this it follows that the eradication of tuberculosis from cattle or, failing this, the destruction of tubercle bacilli in dairy products by efficient pasturization or sterilization must play well-nigh as important a part as the control of tuberculous patients in the prevention of the disease.

Tuberculin Tests.—Considerable additions to our knowledge have been gained by the use of the cutaneous and percutaneous tuberculin tests. These tests consist, briefly, of methods by which tuberculin is applied to the skin of the persons to be tested. The presence or absence of an inflammatory reaction within 48 hours serves as an index as to whether or not the individual tested is or has been tuberculous. In the city, in certain social strata, nearly all children react positively to the cutaneous test before the fourteenth year of life while, in the country, some 40 or 50 per cent. react in similar fashion.

The immunity of tuberculous animals to new infections, noted by Koch, is also apparent in adults with latent or healed tuberculosis. While, on the whole, this acquired immunity is beneficial to the extent of resisting the small infective doses to which human beings are continually exposed, yet the susceptibility to large doses seems to be increased.

Sanatoria for Advanced Cases.—While much progress has been made in the way of the early diagnosis of incipient cases of tuberculosis, and the indigent of this class have been the objects of much charitable endeavor, it is becoming more and more evident that it is persons suffering from advanced tuberculosis who are mainly responsible for the transmission of the disease from human sources and that sanatoria for the advanced are even more important than for the early cases. An encouraging reduction in the death rate from tuberculosis has been observed in England, Sweden, Germany, the State of New York and other places where the segregation of persons in an advanced stage of the disease has been carried out.

TYPHOID FEVER

Death Rate.—The near approach of cholera as in Italy excites great uneasiness, and yet, although the disease is epidemic in that country, and has now prevailed for over a year, so far, less than 6,000 lives have been lost. In the United States, on the other hand, within the registration area there were during 1910, 12,673 deaths from typhoid fever, a disease whose mode of transmission is similar to that of cholera and which, from the sanitarian's standpoint, is fully as preventable.

The registration area of the United States affects only 58.3 per cent. of its inhabitants. The sanitary conditions in the states included in this area are certainly no worse than in states not so included. The total number of deaths from typhoid fever in the United States during 1910 may therefore be conservatively estimated at not less than 25,000, and the number of persons attacked by typhoid fever during that year may be also estimated roughly at ten times that number.

Transmission.—While, in the past, typhoid fever has been cited as a striking example of the milk-borne or water-borne disease, all the epidemiological evidence at hand appears to

indicate that man himself must be regarded as the chief agent in its propagation. Approximately two per cent. of all persons suffering from typhoid fever continue, after recovery, to discharge typhoid bacilli in the urine or fecal discharges or both, and this condition may persist, more or less intermittently, for years. In all probability it is by their agency that the disease is perpetuated when all other sanitary conditions seem favorable for its eradication.

Typhoid Carriers.—Many instances are now on record in which it has been shown that the typhoid bacilli discharged by "carriers" are fully virulent, and that isolated cases and local outbreaks have been traced to them. It is obvious that "carriers" who are employed in vocations which bring them in close relation to articles of food and drink, such as domestic servants, the employees of dairies, groceries, restaurants, bars and the like, have special opportunity to transmit the disease to others.

The whole question of typhoid-infected food and water and the transmission of disease by "carriers" presents a vicious circle in which the presence of "carriers," besides the contact infection which it creates, increases the chances of food and water pollution and attacks of typhoid fever occasioned by infected food and water increase the number of carriers.

Investigations.—The epidemiology and prevention of typhoid fever have been exhaustively investigated by the Public Health and Marine Hospital Service for several years. The origin and prevalence of typhoid fever in the District of Columbia has been the subject of intensive studies and the fourth report of the commission appointed for this purpose has been made. The Service has also had its officers in the field investigating outbreaks during the past year in Des Moines, Iowa, Yakima Valley, Washington, Little Rock and Fort Smith, Arkansas, Charlestown, West Virginia, and Lincoln, Nebraska.

The problem of rural typhoid fever has been also studied in cooperation with the State Board of Health of Virginia. The results of this study will soon be available and seem to point to the fact that, in that state, typhoid fever is a rural disease, a confirmation of the general indications given by the results of the Census of 1900.

The sewage pollution of water of the Great Lakes is being studied with special reference to the spread of typhoid fever. The investigations of sewage pollution in the region of the Great Lakes have emphasized the point that, in addition to the local danger which arises from the careless disposal of human excreta, the power of this condition for evil is greatly enhanced by reason of the commercial importance of this section of the United States and its situation upon the great traffic highways.

Anti-Typhoid Vaccination.—Any measure which will protect the individual and diminish the local prevalence of a disease is, properly, one of great interest, both to sanitary authorities and to the general public. The production of artificial immunity against typhoid fever is such a measure, and, with due regard to certain limitations, presently to be discussed, seems destined to occupy a sphere of great usefulness. Since its introduction anti-typhoid vaccination has been applied with success in the American, English and German armies. (See also XXXI, *Medicine*.)

The principle upon which artificial immunity to typhoid fever is produced by vaccination, is based upon the process by which we suppose immunity to be acquired during an actual attack of the disease. The presence of the typhoid bacillus in the body during an attack of typhoid fever stimulates the elaboration of certain defensive substances in the blood plasma which are directed against the infecting micro-organism and, in the case of recovery, ultimately overcome it. These substances are produced in excess and remain in the system long after recovery. This constitutes an acquired immunity to the disease.

Dead typhoid bacilli, when injected into healthy men, possess the power, to a high degree, of stimulat-

ing the production of their defensive substances against the disease. There are now records of some 120,000 persons who have been vaccinated in the American, English and German armies, either in their native countries or in colonial possessions where typhoid fever is prevalent. The vaccinated have been found to present a case incidence of typhoid fever of at least one-half that of the non-vaccinated, and, in many of the statistical groups, the case incidence has been far less. Moreover, those of the vaccinated who contract typhoid fever, notwithstanding, have much milder attacks than the non-vaccinated, and the case mortality is markedly diminished. During the recent maneuvers upon the Mexican frontier 16,000 American soldiers vaccinated against typhoid fever developed but one case of the disease. (See also XXI, *The Army.*)

In view of the interest that is being manifested in this procedure it is well to point whatever limitations are inherent in the measure.

1. The administration of the vaccine is occasionally followed by local and constitutional symptoms which may attain a considerable degree of severity; the symptoms, however, subside rapidly and no untoward results have been reported. The occurrence of an occasional severe reaction is not a valid objection to the use of this measure.

2. The duration of the immunity conferred is unknown; it is estimated by Col. Firth, R. A. M. C., at about three years after two doses of vaccine; after three doses under the conditions obtaining in America it may and probably is, much longer. There is no objection to revaccination at any time on exposure as is done in vaccination against smallpox. The degree of immunity, while not complete, is very high, and compares favorably with that obtained after vaccination against smallpox.

3. A. E. Wright taught that a negative phase or condition of diminished resistance might follow the administration of the vaccine. This opinion is not held by most authorities and both experimental and clinical evidence are against such a belief. Vaccinations have been carried out in the presence of an epidemic without producing any evidence of a condition of increased susceptibility. If vaccination has been started during the incubation period of the disease it tends to mitigate the severity of the attack. It has been used at all stages of the disease for treatment and has reduced the mortality, duration of illness and number of complications.

The method is of very decided value for persons exposed to conditions which increase the liability to infection with typhoid fever, such as the personnel of armies and navies, physicians, nurses, hospital internes and externes, and travelers. The American army now numbers 17,000 persons who have voluntarily received protective inoculation. A recent order of the Commanding General has made anti-typhoid vaccination compulsory in the American army. By reason of this order, statistics relating to the results of anti-typhoid vaccination in the case of 76,000 individuals will soon be available.

HOOKWORM DISEASE

By modern methods, recognition of hookworm disease is easy, and its treatment is highly satisfactory. The great problem that remains, therefore, is to prevent soil pollution and consequent infection of man.

The disease has been shown to be endemic in Alabama, Arkansas, California, Georgia, Florida, Kentucky, Louisiana, Maryland, Mississippi, Nevada, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

The campaign for the eradication of the disease in the United States, which was made possible through the philanthropy of John D. Rockefeller, has been vigorously prosecuted during the year in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Tennessee, Louisiana and Arkansas, by the Rockefeller Hookworm Commission in coöperation with the state and local health authorities; the state of Florida conducted its campaign independently.

The plan of campaign consists in the institution, on the part of the

State Boards of Health, with substantial assistance from the Commission, of active measures for the education of the public along sanitary lines, in giving free diagnosis and treatment for hookworm disease, in inspecting school children for the disorder, in urging the public to coöperate in the sanitary disposal of excreta, and in inducing the smaller towns to adopt the sanitary privy system or other efficient methods for the safe disposal of night soil.

As in past years, scientific investigations of hookworm disease and soil pollution have been conducted by the Public Health and Marine Hospital Service through its Hygienic Laboratory. In addition to purely laboratory work, practical studies have also been conducted on patients suffering from hookworm disease at the Marine Hospital in Wilmington, N. C.

PELLAGRA

Since 1907 the existence of pellagra has been established in 31 states of the Union, and it has been conservatively estimated that there have been thus far at least 25,000 cases. The exact prevalence of the disease, however, in this country is not known, owing to the difficulty in obtaining reports.

The Public Health and Marine Hospital Service is now engaged in studies of this disease with a view of determining its causation, modes of transmission and propagation. These investigations include the collection of statistics to determine the geographical distribution of the disease, laboratory and clinical observations at the Marine Hospital, Savannah, Ga., and field studies in South Carolina and elsewhere bearing on epidemiology.

The disease is characterized by constitutional, cutaneous, digestive and nervous symptoms. It is apt to run a chronic course, is subject to periodic remissions and exacerbations, and may lead to paralytic and profound mental disturbances. The cause of the disease is still entirely unknown.

MEASLES

Death Rate.—Measles is a serious disease, the importance of which is little appreciated by the general public. In 1910 measles caused 6,598 deaths in the registration area of the United States. As practically all of these deaths occurred in the very young, this number represents the measles mortality of a class which constitutes only about 10 per cent. of the total population of the registration area. During 1910 measles caused more deaths than either scarlet fever or whooping cough. Measles, therefore, is one of the most serious of the disease constituting the group known as the diseases of childhood.

Virus.—Our knowledge of the virus of the disease has been considerably increased by the researches of Anderson and Goldberger of the Public Health and Marine Hospital Service, who have been able successfully to transmit the disease to lower animals, and thus to demonstrate definitely some of the properties of its virus. These observers succeeded in reproducing the disease in monkeys by inoculations with the blood or with the secretions of the mouth and nose of persons suffering from measles.

The results of their observations may be thus summarized:

1. The virus of measles belongs to the group of "filtrable viruses," *i. e.*, it will pass through filters impervious to visible bacteria.
2. The virus is present in the blood, but, in all probability, not after the second day of the eruption.
3. The virus is present in the secretions of the mouth and nose.
4. The virus resists drying for at least 24 hours.
5. It resists freezing for at least 24 hours.
6. It is destroyed by heating to a temperature of 55 degrees for one hour.
7. The virus was not found in the epidermal scales in the desquamation consequent upon measles.
8. The result of the experiments suggests that the infectivity of measles decreases very rapidly with the approach of convalescence.

These studies throw additional light on problems relating to the prevention of measles, and are sufficient to justify the modification in some measure of present quarantine methods and practice.

ROCKY MOUNTAIN SPOTTED FEVER

Rocky Mountain fever is known to exist in the following states: Colorado, Montana, Nevada, Oregon, Utah and Wyoming. It is also possibly present in neighboring states. The disease presents a remarkable variation in severity, the case mortality ranging from 5 per cent. in Idaho to from 65 per cent. to 90 per cent. in the Bitter Root Valley, Montana.

Characteristics.—Although the disease has been known to local physicians for the last 30 or 40 years, the attention of the medical profession was first directed to the disease in 1899 by Maxey, who described it as "an acute, endemic, non-contagious but probably infectious disease, characterized by continuous moderately high fever, severe arthritic and muscular pains, a profuse and petechial eruption in the skin, appearing first on the ankles, wrists and forehead, but rapidly spreading to all parts of the body." The disease was investigated by Wilson and Chowning in 1902, who suggested that it was transmitted by ticks. This theory was supported by Anderson in 1903, and definitely proved by Ricketts in 1906.

Transmission.—Further researches of Ricketts have shown that a tick (*Dermocentor Andersoni*) is the agent in the transmission of the disease, that the tick may transmit the disease in all stages of its development, and that the infection may be transmitted by female ticks to their progeny. He further showed that ticks collected in their natural habitat were found infected and capable of transmitting the disease, and that not only man, but the monkey and a variety of rodents, many of which form part of the fauna of the Bitter Root Valley in Montana, are susceptible to the infection.

Montana.—The presence of the disease in the Bitter Root Valley, one of the most fertile regions of Western Montana, has caused grave apprehension among the inhabitants by reason of its severity. The state of Montana appropriated $5,000 in 1911, and a similar sum for 1912 for the purpose of eradicating the disease. The State Board of Health and the Public Health and Marine Hospital Service in coöperation have accordingly conducted experiments to determine the eradicability of the disease.

Prevention.—The prevention of the disease resolves itself into the control of the tick. As ticks which do not succeed in feeding on warm-blooded animals do not mature, eradication is based upon the principle of preventing the access of ticks to this source of food. To this end, in one section of the Bitter Root Valley 584 domestic animals, upon which ticks nearing maturity seem to depend for food, were "dipped" in tick repellants. As the wild rodent population of the valley is also susceptible to the disease, during the past summer 3,465 small wild animals were killed.

The following rodents, indigenous to the Bitter Root Valley, have been shown to be susceptible to the virus of Rocky Mountain spotted fever: the Columbian ground squirrel, the rock squirrel, the woodchuck, the yellow-bellied chipmunk, and the wood-rat.

INFANTILE PARALYSIS

Death Rate.—Poliomyelitis, which has occurred annually during the summer and fall seasons since 1907, again reappeared during the past year. The onset of the disease throughout the United States, however, was apparently delayed, and outbreaks in the Southern States were among the first to be reported. In 1910, 5,093 cases, with 525 deaths, were reported to the Public Health and Marine Hospital Service by health officers of 31 states, the District of Columbia, and Hawaii. Apparently the geographic distribution of the disease is becoming greater, although there may not have been as many cases last year on account of the late onset. The disease was much less prevalent during the first six months of 1911, only 138 cases and 98 deaths having been reported for that period.

Investigations.—In the latter part of October and subsequently outbreaks were reported from Cleveland and Cincinnati, Southern Indiana, Iowa, South Dakota, and elsewhere, and in some of these places the dis-

ease has been made the subject of intensive study. To aid in such studies a questionaire was prepared and adopted in the conference of State Health Officers with the Public Health and Marine Hospital Service, and are being used in many places.

On account of the importance of poliomyelitis, extensive investigations are being continued in many places. The states of Indiana and Rhode Island have appropriated money for the study of the disease, and the state of Massachusetts has continued its appropriation for the same purpose.

Detection.—Flexner and Clark of the Rockefeller Institute, have further shown experimentally that the virus when taken up by flies was still infective after 48 hours. Anderson and Frost, by means of biologic tests, determined definitely that six out of nine suspected cases without paralysis were true infantile paralysis, and emphasized this important means of detecting otherwise unrecognized cases, which have an important epidemiologic bearing.

Transmission.—Neustader and Thro have made observations regarding the transmission of poliomyelitis which, if confirmed, will be of great value in its prevention. These observers have announced that they were able to infect monkeys with poliomyelitis by injecting salt solution, in which dust, collected from rooms occupied by persons suffering from the disease, had been suspended, and the bacteria removed by filtration. The transmission of the disease by dust would have an important bearing on the isolation of patients and the disinfection of rooms occupied by them.

Prevention.—The important fact has also been established that the use of hexanuthylenamin in experimental animals will prevent the onset of paralysis in a certain proportion of them.

RABIES

The distribution of rabies is wide in the United States, and embraces all the states of the Union but eight, in which the infection has not as yet been observed. The disease reappeared on the Pacific slope in 1911 after an absence of some years.

Treatment.—In the absence of the control of rabies among lower animals, provision is necessary for the prevention of the development of the disease in persons bitten by rabid animals. Twenty institutions located in 19 states are accordingly prepared to administer antirabic treatment. At the Hygienic Laboratory in Washington, D. C., protective inoculations are furnished free to all persons presenting themselves for treatment. The protective virus is also distributed to state health officers on request. During the fiscal year ended June 30, 1911, 128 persons presented themselves for treatment at the Hygienic Laboratory, and 790 treatments were furnished to 20 state boards of health and the Canal Zone.

The disease has been made reportable in California and Florida, while provision was made for the free administration of Pasteur treatment to indigent persons in Kansas, Indiana, and Virginia. Until such time as adequate control over animals susceptible to the disease is maintained, the expense and inconvenience of antirabic treatment will have to be borne.

IMPROVEMENT OF WATER SUPPLIES

The importance of pure water supplies in the reduction of the death rate in general, and that of typhoid fever in particular, is mathematically demonstrated by the decline of the death rate from that disease in the cities of Columbus, Cincinnati, Philadelphia and Pittsburgh, in which filtration and purification plants have been established in the last few years as follows:

	Typhoid Fever Death Rate per 100,000.	
	1908.	1910.
Columbus, O.....	110	22
Cincinnati, O.....	60	8.5
Philadelphia, Pa.....	60	18
Pittsburgh, Pa.....	130	27

A notable example of a water supply requiring purification to terminate an epidemic and to prevent future

epidemics was that at Erie, Pa. In that city over 600 cases of typhoid fever occurred within four months, primarily due to an infected water supply. On this account, and following the example of a large number of other cities, a plant was put in operation March 15, 1911. To purify the water hypochlorite of lime was used. This method of purifying water supplies has come largely into use in many cities, and proven successful.

The sterilization of water with ultra-violent rays has been the subject of experiment at the Sorbonne in Paris. A mercury-vapor lamp was used as the source of the ultra-violet rays. (See XX., *Public Services;* XXVIII, *Sanitary Chemistry;* and XXXII, *Civil Engineering.*)

MEDICAL INSPECTION OF ALIENS

Immigration in 1911.—During the fiscal year 1911, 1,090,809 immigrants arrived at ports in the United States. Of this number the following were found suffering from mental and bodily defects and diseases within the meaning of the law: idiocy, imbecility, feeble-mindedness, epilepsy, insanity and tuberculosis, 650; loathsome and dangerous contagious diseases, 3,614; diseases or defects which affect ability to earn a living, 14,738; diseases or defects of less degree, 8,353; total, 27,396.

The Immigration Law.—The United States immigration laws provide for the exclusion of aliens afflicted with loathsome or dangerous contagious diseases, tuberculosis, insane persons, idiots, imbeciles, feeble-minded persons, epileptics and persons afflicted with a mental or physical defect of such character as to affect their ability to earn a living. By regulations prescribed under the law, venereal disease and various cutaneous diseases, such as favus, ringworm, actinomycosis, blastomycosis, frambesia, mycetoma and leprosy are defined as loathsome contagious diseases. By regulation also a dangerous contagious disease is one which is held to be communicable in character, essentially chronic in course, and imperilling life or one of the essential senses of the body. It was in accordance with these several provisions that the above mentioned cases were rejected, among which were 2,504 cases of trachoma, a disease the exclusion of which has an important bearing on the public health.

SANITATION IN THE CANAL ZONE

The great improvement in the sanitary conditions in the Canal Zone by which the death rate among the employees was reduced from 41.73 per thousand in 1906 to 10.98 per thousand in 1910 has been continued. During the first six months of 1911 the number of the employees of the canal commission averaged 48,450, of which 12,425 were white and 36,025 were colored. The death rate of the white employees was 10.19 per thousand, while that of the colored was 10.71. From this it is seen that the death rate was practically the same for the two races, and indicates what may be accomplished by medical supervision and sanitation, as in cities of the United States the death rate among the colored race far exceeds that of the white population.

During the same period the general death rate among both the civil population and employees of Panama, Colon and the Canal Zone was 21.21 per thousand, as against 21.18 in 1910 and 51.89 in 1906.

From Jan. 1 to June 30, 1911, there were 16 deaths from malaria, 6 deaths from typhoid fever, 28 deaths from tuberculosis and 35 deaths from pneumonia, while 87 deaths were due to external violence. There were no cases of smallpox or yellow fever on the Isthmus.

One death from plague was reported Oct. 17 in the person of a former employee who sailed from Guayaquil on Oct. 7, was detained at quarantine, and admitted to the Ancon Hospital on Oct. 13.

SANITATION IN RELATION TO MILITARY MANEUVERS

Morbidity in the Texas Mobilization.—An example of the progress made in military sanitation was the work of the army medical corps in connection with the mobilization of

troops in the Southwest during 1911. The main strength of the Maneuver Division at San Antonio, Texas, during June was 12,801. In addition to the necessary hospitals, a portable field laboratory was provided for diagnostic and sanitary purposes. The sanitary arrangements of the camp were evidently of a high order, and the sanitation maintained by rigid medical supervision. The morbidity rate of the Maneuver Division was 22 per thousand up to July 1, whereas the rate was 34 for all troops in the United States for the year 1910. The actual number of admissions for the most important camp diseases were typhoid fever 2, malaria 9, simple diarrhoea 119, and dysentery 29.

Typhoid.—As an additional means of guarding against typhoid fever anti-typhoid vaccine was resorted to. Up to July 1, 8,097 men were immunized. As a means of illustrating the great advance in camp sanitation and the value of anti-typhoid vaccine, Kean has compared the typhoid incidence of the camp at San Antonio, Texas, in 1911, with the military camp at Jacksonville, Fla., in 1898. In the latter camp there were 2,693 cases of typhoid fever, with 248 deaths, while in the former mentioned camp only two cases were reported. ("The Sanitary Record of the Maneuver Division," *Journal A. M. A.*, Aug. 26, 1911, p. 713.)

SANITARY CONFERENCES

The ninth annual conference of state and territorial health authorities with the Public Health and Marine Hospital Service was held in San Francisco June 24, 1911, as required by law, and attention given among other things to the anti-plague measures being taken in that state. The annual conference of state and provincial health authorities of North America was also held in Los Angeles, Cal., June 30, 1911, this latter conference being unofficial but influential in bringing about uniformity of action in health administration.

Two important international conferences were held, one of them the Fifth International Sanitary Conference of the American Republics, at Santiago, Chile, Nov. 5-12, and the other, an international sanitary conference, at Paris, Nov. 10, 1911. It is conferences of this character that initiate international sanitary agreements, and the objects of the present conferences are to bring about revision of existing agreements and to establish unity of thought and action in sanitary matters affecting international commerce.

PREVENTION OF INFANT MORTALITY

Death Rate.—In the registration area of the United States during 1910 there were 196,534 deaths of children under five years of age, constituting 26.8 per cent. of the total deaths in that area during the year. (See also *infra, Vital Statistics.*) Owing to the almost complete absence of birth statistics, the infant mortality rate in the United States is unknown, but it is estimated to be somewhere between 140 and 150, that is, out of every 1,000 infants born, about 150 die during the first year of life. Recognition of the importance of this loss to the country is responsible for an increasing interest in the adoption and enforcement of measures to prevent it. A number of unofficial societies have accordingly been organized and children's bureaus established in New York and Philadelphia.

Milk Supplies.—Of the 196,534 deaths of children mentioned above, 52,516 occurred before the age of two years, and were due to diarrhoea and enteritis. It is known that from 80 per cent. to 90 per cent. of all infants dying from gastro-intestinal diseases were bottle fed. One of the great measures, therefore, for the reduction of infant morbidity and mortality is to provide safe supplies of milk to meet the special needs of infants. Great progress has been made in this respect, not only through official but unofficial action. The American Association of Medical Milk Commissions may be regarded as a pioneer in this movement, and at its annual meetings aims to advance and

perfect methods looking to the production of ideal milk for the use of infants and invalids. In connection with its last annual meeting in Philadelphia there was held under the auspices of the Department of Public Health and Charities a milk show which within one week was visited by over 110,000 persons.

Child Welfare Exhibits.—Other exhibitions held in the recent past were the Child Welfare Exhibit in New York, exhibits held in Chicago, Albany and elsewhere, during 1911, and the exhibit held in Baltimore, Md., in Nov., 1910, under the auspices of the American Association for the Study and Prevention of Infant Mortality. The object of this latter association is to systematize the work and solicit the coöperation of all agencies interested in infant welfare, besides educating the general public in the measures which should be instituted for diminishing the death rate among the new-born. The last meeting of the association was convened in Chicago Nov. 16-18, 1911. The exhibits held in Baltimore, Chicago and elsewhere were designed to set forth the extent, the cause and the means of the prevention of infant mortality.

Investigations. — Special interest has been manifested by the Russell Sage Foundation in the prevention of infant morbidity, and certain of the problems relating thereto have been made the subject of continuous investigation. In May, 1911, a Child's Welfare Conference was held in Richmond, Va. The Public Health and Marine Hospital Service has collected statistics which show that there are 43 institutions situated in 30 cities of the United States whose object it is to diminish infant mortality by giving instructions to mothers, encouraging maternal feeding, and providing, where necessary, suitable milk for the use of children who must be artificially fed.

Many of the state and municipal health departments have also directed their attention to the protection of infant life and endeavored by means of popular education, investigations of social conditions and similar activities, to bring about a diminution of the causes of infant mortality.

The prevention of infant mortality is so intimately bound up with the health conditions of communities that it becomes a problem of administration along with others for the sanitation of communities, and the success of that administration will only be known when health authorities succeed in collecting adequate birth and death reports and take adequate measures following the receipt of morbidity reports.

PUBLIC HEALTH LEGISLATION

The enactment of legislation is an indication of the trend of opinion with respect to public questions. This applies particularly to public-health legislation.

National.—During the second session of the 61st Congress, provision was made for the admission into marine hospitals of patients suffering with contagious and infectious diseases for purposes of scientific study.

State.—Important changes were made in the laws governing the sanitary organization of various states, as Nevada, North Carolina, and Porto Rico. Additional powers were granted local health officers in Vermont, and in California the State Laboratory of Hygiene was placed under the State Board of Health, and authority granted to establish additional laboratories.

Reportable Diseases.—The legislative tendency was to increase the number of reportable diseases. For instance, poliomyelitis was made reportable in many states, as was also ophthalmia neonatorum. Pellagra was for the first time made reportable by law in California. California and Utah required the reporting of venereal diseases, for the first time in the United States.

Ophthalmia Neonatorum.—The unusual prevalence of some diseases in localities, or the realization by the public of their importance were responsible for the enactment of spe-

cific measures in certain states. Thus in Massachusetts, New Jersey and Vermont provision was made for the distribution of prophylactic treatments for the prevention of ophthalmia neonatorum, making with New York and Rhode Island five states in which this authorization exists.

Sanatoria.—In addition, the appropriations made for existing sanatoria, appropriations for new sanatoria were made during 1911 in Connecticut, Kansas, Montana, Nebraska, North Dakota and West Virginia, while Missouri provided for district hospitals for tuberculosis, and New Jersey and Wisconsin authorized the establishment by counties of such hospitals.

Tuberculosis.—Provision for the care of tuberculous persons was made in California and Porto Rico, and for educational campaigns against the disease in California and New Jersey. State commissions for the study of tuberculosis and to make recommendations of the best methods for its prevention were created by law in New Jersey and Minnesota. Laws relating to the registration of cases of tuberculosis were enacted in Hawaii, New Jersey and New Hampshire, and in New Jersey and Wisconsin laws forbid promiscuous expectoration in public places.

Antirabic Treatment. — Provision for the administration of antirabic treatment to indigent persons was made in Kansas and Indiana. Similar provision with respect to the furnishing of diphtheria antitoxin was made in Connecticut, Delaware and Iowa.

Public Drinking Cups.—As a result of organized effort to suppress the promiscuous use of public drinking cups, laws were passed during 1911 preventing their use in Colorado, Connecticut, Idaho, Illinois, New Hampshire, New Jersey, Massachusetts and Vermont, and like provision was contained in the regulations of seven other states.

Industrial Sanitation.—A beginning for ascertaining the prevalence of occupational diseases was made in 1911 when laws requiring the reporting of such diseases were passed in several of the states. Further protection to the health of employees was provided for by laws passed in Illinois, Maryland, Massachusetts, New York and Virginia to secure greater safety and better sanitation of various industries.

Sterilization of Criminals. — In Iowa and New Jersey provision was made in law for the sterilization of degenerate criminals, thus making, with California, Connecticut and Indiana, five states in which such law is in force.

Poisons and Narcotics.—In California, Illinois, Indiana, Massachusetts, Montana, New York, Ohio, South Carolina and West Virginia, laws were enacted restricting the sale of poisons and narcotics.

School Children.—Medical inspections of school children were provided for by law in Indiana, Utah and West Virginia. (See XXXVI, *Education.*)

Building Inspection.—In order to insure the sanitation of buildings, laws were passed in Idaho and Tennessee providing inspections of hotels and similar establishments, and in California and New York for the regulation of tenement houses.

Water and Milk Pollution.—Laws having for their object the prevention of water pollution were passed in California, Massachusetts, New Jersey, Illinois and Wisconsin. Provision was made to prevent the contamination of milk supplies in 13 states, and in several of these provision was made for enforcement of the tuberculin testing of imported cattle.

Pure Food.—In a number of states amendments were made to the respective pure food laws. In addition, laws requiring the sanitation of food establishments and the personal hygiene of employees handling or selling food products were passed in New Hampshire, Rhode Island, Illinois and Utah, the law in the last named state relating only to meat or meat products. In addition to the above, laws were passed in a number of states having for their object the control of the practice of plumbing, nursing, pharmacy and embalming.

In addition to state legislation, a large number of ordinances affecting public health were passed by city authorities, and copies of many of these were published weekly in the Public Health Reports.

VITAL STATISTICS OF THE UNITED STATES

CRESSY L. WILBUR

Extension of the Registration Area.—The following table shows the growth of the registration area of the United States up to the close of the year 1910:

YEAR.	Population.			Deaths[1] in Registration Area.	
	Continental United States.	Registration Area.			
		Number.	Per cent.	Number.	Rate per 1,000 Population.
Census year 1879–1880	50,155,783	8,538,366	17.0	178,645	19.8
Census year 1889–1890	62,622,250	19,659,440	31.4	386,212	19.6
Census year 1899–1900	75,994,575	28,807,269	37.9	512,669	17.8
Calendar year 1900		30,765,618	40.5	539,939	17.6
Calendar year 1901	77,747,402	31,370,952	40.3	518,207	16.5
Calendar year 1902	79,365,396	32,029,815	40.4	508,640	15.9
Calendar year 1903	80,983,390	32,701,083	40.4	524,415	16.0
Calendar year 1904	82,601,384	33,345,163	40.4	551,354	16.5
Calendar year 1905	84,219,378	34,052,201	40.4	545,533	16.0
Calendar year 1906	85,837,372	41,983,419	48.9	658,105	15.7
Calendar year 1907	87,455,366	43,016,990	49.2	687,034	16.0
Calendar year 1908	89,073,360	46,789,913	52.5	691,574	14.8
Calendar year 1909	90,691,354	50,870,518	56.1	732,538	14.4
Calendar year 1910	92,309,348	53,843,896	58.3	805,412	15.0

[1] Exclusive of stillbirths.

The registration area for deaths is composed chiefly of those states in which the registration under state laws is sufficiently complete so that transcripts are obtained by the Bureau of the Census as the basis for the annual compilation of mortality statistics.

It will be seen in the above table that the registration area for deaths now embraces nearly three-fifths (58.3 per cent.) of the total population of continental United States. For the year 1910 the states of Minnesota, Montana, and Utah were added. North Carolina is also shown for municipalities of 1,000 population and over, the statistics being collected under the state law. This law has been extended to municipalities of 500 population and will undoubtedly in time cover the entire state.

The results obtained in Missouri under the operation of the law based upon the model bill recommended by the American Medical Association and the Bureau of the Census, have been so good as to warrant its admission to the registration area for the year 1911.

A similar law went into effect in Kentucky, beginning with 1911. Active interest continues in many parts of the South and the prospect for additional registration states and for the enforcement of birth registration laws is excellent.

Certain cities in non-registration states are also included, the registration of deaths in these cities being conducted under local ordinances. The death rate of the registration area for 1910 (15 per 1,000) was slightly higher than that shown for the year preceding (14.4), and also 1908 (14.8). The rate was a low one, however, and indicates a very favorable condition of the public health.

Death Rates.—The annual crude death rate per 1,000 population, for all registration states and cities of 100,000 population or over, for the years 1901-5, 1909, and 1910, are given on another page of the YEAR BOOK (page 33). It should be remembered in comparing the crude death rates that such figures are af-

fected by peculiarities of the distribution of population. Color, race, sex, and age, should be considered. An area having a large proportion of persons at the most healthful ages would normally show a lower general death rate than a population with larger proportions of very young children and of elderly persons. This caution is especially necessary in comparing the death rates for cities of 100,000 population. The rates shown for the large American cities are all low and without exception indicate a very favorable mortality. The high rates shown for Birmingham, Washington, Atlanta, New Orleans, Baltimore, and other cities of the South, are due to the large proportion of colored population, which under the conditions at present existing has practically always a higher mortality than the

INFANT MORTALITY IN CITIES OF 50,000 POPULATION OR OVER

Birth Registration Cities of 50,000 Population or over.	Births, 1910.[1]	Deaths of infants under 1 year, 1910.[2]	Deaths of Infants per 1,000 Living Births.		
			1910.[3]	1909.	1908.
Connecticut:					
Bridgeport	2,976	367	123	138	128
Hartford	2,411	286	119	107	110
New Haven	3,772	406	108	120	111
Waterbury	2,150	320	149	147	132
District of Columbia:					
Washington	7,016	1,068	152	148	157
Maine:					
Portland	1,163	167	144	136	137
Massachusetts:					
Boston	17,760	2,246	126	120	149
Brockton	1,359	134	99	119	97
Cambridge	2,462	293	119	102	118
Fall River	4,591	854	186	186	178
Holyoke	1,702	362	213	231	182
Lawrence	3,165	529	167	172	155
Lowell	2,630	607	231	185	202
Lynn	2,218	216	97	99	111
New Bedford	3,873	685	177	143	144
Somerville	1,728	174	101	84	98
Springfield	2,438	302	124	114	96
Worcester	3,918	536	137	121	114
Michigan:					
Detroit	11,960	2,138	179	176	175
Grand Rapids	2,693	329	122	101	102
Saginaw	897	130	145	125	134
New Hampshire:					
Manchester	1,939	375	193	263	212
New York:					
New York	129,316	16,159	125	130	129
Bronx Borough	10,926	1,047	96	105	107
Brooklyn Borough	43,128	5,063	117	119	120
Manhattan Borough	66,112	8,900	135	140	136
Queens Borough	7,095	865	122	135	126
Richmond Borough	2,055	284	138	152	169
Pennsylvania:					
Allentown	1,406	202	144	141	164
Altoona	1,392	166	119	116	117
Erie	1,713	197	115	155	124
Harrisburg	1,308	169	129	129	116
Johnstown	1,628	268	165	162	121
Philadelphia	38,666	5,334	138	135	149
Pittsburgh	15,059	2,259	150	141	152
Reading	2,370	336	142	110	139
Scranton	3,512	520	148	146	176
Wilkes-Barre	1,840	269	146	120	144
Rhode Island:					
Pawtucket	(4)	191	(4)	173	150
Providence	(4)	827	(4)	135	133

[1] Provisional and exclusive of stillbirths.
[2] Exclusive of stillbirths.
[3] Based on provisional figures for births.
[4] Returns of births not received from the state board of health in time for inclusion.

INFANT MORTALITY IN REGISTRATION STATES

Birth Registration States.	Births, 1910.[1]	Deaths of infants under 1 year, 1910.[2]	Deaths of Infants per 1,000 Living Births.		
			1910.[3]	1909.	1908.
Connecticut	27,291	3,476	127	127	122
Maine	15,578	2,108	135	118	125
Massachusetts	86,765	11,377	131	125	130
Michigan	63,566	7,912	124	117	119
New Hampshire	9,385	1,373	146	154	146
Pennsylvania	202,631	28,377	140	131	138
Rhode Island[4]	6,595	1,111	168	142	132
Vermont	7,343	791	108	114	110

[1] Provisional and exclusive of stillbirths.
[2] Exclusive of stillbirths.
[3] Based on provisional figures for births.
[4] Exclusive of Pawtucket and Providence, R. I., for 1910, for which the returns were not received from the state board of health in time for inclusion.

white population. The low death rates shown for Seattle, Portland, and certain other cities, are dependent to some extent on the favorable age distribution of the population. Until *corrected* death rates can be prepared claims of greater healthfulness should not be made upon the basis of crude death rates.

Infant Mortality.—Although the registration of births as a whole is far more defective in the United States than the registration of deaths, it is perhaps sufficiently complete in certain states and cities so that comparison of the ratio of deaths of infants under one year to the number of births may be made. This ratio is known as the rate of infantile mortality and is very important for practical sanitary purposes.

The rates given in the accompanying tables are probably somewhat higher than the truth, because in none of the states or cities represented, although embraced in the provisional birth registration area of the Census Bureau, are all births registered.

Important Causes of Death.—In the following table the death rates from certain important causes of death may be compared with those shown from some countries as given in the International Statistics from the latest report of the Registrar-General of England:

DEATH RATES PER 100,000 PERSONS LIVING, FROM CERTAIN IMPORTANT CAUSES OF DEATH, 1900 TO 1909

Country.	Annual Average: 1900 to 1909.	1907.	1908.	1909.	Annual Average: 1900 to 1909.	1907.	1908.	1909
	Typhoid Fever.				*Diphtheria and Croup.*			
Austria	18.4	14.9	14.9	[1]	39.5	24.7	28.5	[1]
Belgium	16.0	11.9	11.2	[1]	20.3	15.6	16.6	[1]
England and Wales	10.2	6.7	7.5	6.0	19.4	16.4	15.8	14.6
Holland	8.0	6.5	6.3	5.4	8.0	6.2	6.3	5.8
Hungary	28.2	26.4	24.3	30.2	44.3	34.8	44.7	43.8
Ireland	11.5	8.3	7.7	7.0	8.1	6.5	8.5	9.0
Italy	33.1	25.5	27.2	28.3	15.1	16.7	17.3	16.8
New South Wales	20.2	12.2	19.3	17.7	8.0	8.6	7.7	10.2
New Zealand	7.4	5.8	9.5	5.7	5.1	6.0	3.7	6.6
Scotland	10.3	7.7	5.8	[1]	15.1	14.1	14.4	[1]
Spain	41.5	34.8	31.9	26.9	24.6	18.5	19.9	21.4
Sweden	8.7	6.3	8.8	[1]	29.7	15.6	11.9	[1]
Switzerland	5.7	5.0	3.8	[1]	20.1	15.0	15.9	[1]
United States (registration area)	29.5	29.5	24.3	21.1	27.3	23.6	21.5	20.4

[1] Figures not available.

DEATH RATES PER 100,000 PERSONS LIVING, FROM CERTAIN IMPORTANT CAUSES OF DEATH, 1900 TO 1909

Country.	Annual Average: 1900 to 1909.	1907.	1908.	1909.	Annual Average: 1900 to 1909.	1907.	1908.	1909.
	Smallpox.				*Tuberculosis of the Lungs.*			
Austria	0.3	0.1	[2]	[1]	331.3	314.5	302.0	[1]
Belgium	5.9	0.8	0.6	[1]	114.7	100.8	101.0	[1]
England and Wales	1.3	[2]	[2]	0.1	118.8	114.0	111.7	108.1
Holland	0.1	0.1	[2]	.....	133.3	129.7	119.5	122.6
Hungary	1.9	0.7	0.6	0.5	[3]384.5	[3]384.1	[3]370.1	[3]361.4
Ireland	0.1	[2]	.....	.....	208.7	201.7	194.7	184.2
Italy	5.3	1.3	1.6	2.2	119.9	124.3	121.9	122.3
New South Wales	[1]	.....	.....	.....	73.0	61.8	63.5	64.0
New Zealand	[2]	.....	.....	.....	67.6	66.6	64.2	60.5
Scotland	1.6	[2]	0.1	[1]	142.5	134.3	125.9	[1]
Spain	21.8	16.6	14.2	19.9	139.3	137.6	134.6	124.2
Sweden	[2]	.....	[2]	[1]	[1]	[1]	[1]	[1]
Switzerland	0.4	0.2	0.1	[1]	185.8	172.0	173.0	[1]
United States (registration area)	1.7	0.2	0.2	0.2	159.4	154.3	144.0	137.7
	Measles.				*Cancer.*			
Austria	31.0	24.4	28.2	[1]	74.9	76.9	77.5	[1]
Belgium	36.1	27.5	40.4	[1]	59.3	60.1	63.8	[1]
England and Wales	32.3	36.1	22.7	35.3	88.7	90.8	92.6	95.2
Holland	30.4	25.9	27.2	16.5	98.8	101.8	102.8	102.6
Hungary	41.4	41.7	44.7	38.8	40.1	42.0	43.4	43.7
Ireland	14.7	13.3	19.6	10.1	71.5	76.3	75.8	80.1
Italy	25.4	24.2	34.4	32.1	57.9	61.2	64.0	63.5
New South Wales	2.5	5.8	2.0	0.7	65.6	69.8	66.6	71.8
New Zealand	5.4	11.0	2.0	2.7	68.1	73.3	69.5	73.2
Scotland	34.3	24.1	51.9	[1]	87.4	95.3	95.5	[1]
Spain	54.7	34.8	36.3	38.8	45.4	46.9	50.3	49.7
Sweden	7.9	8.2	9.1	[1]	[1]	[1]	[1]	[1]
Switzerland	17.9	17.4	6.4	[1]	129.6	125.2	131.3	[1]
United States (registration area)	9.9	10.0	9.9	9.6	69.2	70.9	71.5	73.8
	Scarlet Fever.				*Diarrhœa and Dysentery.*			
Austria	43.9	35.9	53.2	[1]	7.6	9.1	2.9	[1]
Belgium	13.9	12.7	16.3	[1]	116.7	98.3	106.5	[1]
England and Wales	11.1	9.2	8.0	9.0	60.8	30.5	52.2	28.9
Holland	3.2	4.7	5.2	3.0	118.2	90.2	128.6	85.9
Hungary	59.8	57.2	65.4	50.7	31.9	27.3	22.0	33.3
Ireland	3.8	2.3	1.6	3.0	30.1	24.4	27.4	22.9
Italy	6.3	8.7	10.1	7.9	318.5	287.8	278.2	304.8
New South Wales	2.6	1.7	2.5	1.8	107.9	93.9	97.5	91.5
New Zealand	4.1	2.7	6.3	2.7	21.3	34.2	21.0	10.5
Scotland	8.4	4.9	7.9	[1]	29.5	16.7	25.4	[1]
Spain	7.4	12.0	11.1	8.7	371.9	319.6	350.9	313.8
Sweden	7.7	4.1	4.7	[1]	21.2	13.9	17.0	[1]
Switzerland	4.4	4.0	4.1	[1]	106.3	85.0	72.6	[1]
United States (registration area)	10.6	10.0	11.9	11.4	120.1	119.8	117.9	108.8

[1] Figures not available.
[2] Less than one-tenth.
[3] The deaths from pulmonary tuberculosis being incomparable, those from tuberculosis have been substituted.

XIX. PUBLIC RESOURCES AND PUBLIC WORKS

PUBLIC LANDS

MORRIS BIEN

Legislation.—The amount of legislation relating to the public lands during the last session of Congress was unusually small, no statutes of first importance affecting this matter being passed, except the act of March 1, 1911, providing for the establishment of National Forest Reserves in the Eastern States by the purchase of lands now in private ownership. This is the outcome of the agitation which had been carried on for a number of years for the establishment of such National Forest Reservations in the Appalachian Mountain region. The details of this legislation will be fully discussed elsewhere in this volume. (See XIX, *Forestry.*)

Another act of general importance in regard to the public lands is that of Feb. 21, 1911, which authorizes the Secretary of the Interior to make contracts for delivering to private irrigation enterprises surplus water which may be impounded in reservoirs constructed in connection with the irrigation works authorized by the Reclamation Act of June 17, 1902, and also to make contracts permitting private irrigators to utilize any excess carrying capacity which may be developed in connection with reclamation projects.

The general disposition of public lands has continued under existing laws at slightly less than the rate which has prevailed during past years.

Sale of Indian Lands.—About 700,000 acres of lands located within three former Indian reservations have been thrown open to the public. The lands so made available were about 170,000 acres in the Pine Ridge Indian Reservation, S. D., about 300,000 acres in the Rosebud Indian Reservation, S. D., and about 227,000 acres in the Fort Berthold Indian Reservation, N. D. These lands were opened to homestead entry at prices ranging from $0.25 to $6.00 per acre, according to the appraised values. Payments are to be made in five annual instalments, and the net proceeds are turned into the corresponding tribal fund. The sales of the Pine Ridge and Rosebud Reservations were combined. There were about 54,000 applicants for these lands, or about 18 for each homestead tract. About 20,000 applicants filed for the lands in the Fort Berthold Reservation, or about 14 for each homestead tract.

The successful applicants were selected by means of the drawing of slips from a large receptacle, the names of all applicants having first been placed therein. Homestead entries for the lands were made in the order of drawing. In most cases the early chances were worth considerable sums, as much as $10,000 to $15,000 being paid for early rights of this kind, because the successful party would have the right to select a tract adjoining some existing or proposed town site.

On the Crow Indian Reservation, Mont., about 274,000 acres of land which had been open to entry for about four years were sold at public auction, about $829,000 being realized for the fund of the Indian tribe. Nearly 600,000 acres remain unsold and are being held for future openings.

The most successful sale of lands for homestead entry ever held by

the Government was that which took place this year in Oklahoma when 10,400 acres of the Cheyenne and Arapahoe Indian Reservation, which had been reserved for agency and school purposes, were sold on sealed bids. One hundred and thirty tracts were sold for homestead entry in areas of 80 acres each, a total of 10,400 acres for $271,648, an average of nearly $27 per acre. Some of the land sold at a price as high as $72 per acre.

National Parks.—Congress has by special legislation set apart for National Parks for preserving remarkable natural conditions and for the general education and recreation of the public, more than 4,500,000 acres. The National Parks, date of establishment and their areas are given in the following table, taken from the Report of the Secretary of the Interior for the year ending June 30, 1910:

Arkansas, amounting to more than 120,000. Nearly 20,000 people visited the Yellowstone National Park in Wyoming, Idaho and Montana, and about 13,000 the Yosemite National Park in California.

Preservation of American Antiquities.—By an Act approved June 28, 1906, the President is authorized to declare as public monuments places of historic or scientific interest which are located upon lands owned or controlled by the United States. There are 27 such monuments, ranging in area from 10 acres to the Grand Canyon National monument, about 800,000 acres.

The table of national monuments on the next page is taken from the report of the Secretary of the Interior for the year ending June 30, 1910, with two additions which were made during the year 1911. In most cases the purpose of the reservation is indicated by the name.

DATE OF ESTABLISHMENT AND AREA OF NATIONAL PARKS

Name.	Date of Establishment.	Area, Acres.
Yellowstone (Wyo., Mont. and Idaho)	Mar. 1, 1872	2,142,720.00
Yosemite (Cal.)	Oct. 1, 1890	719,622.00
Sequoia (Cal.)	Sept. 25, 1890	161,597.00
General Grant (Cal.)	Oct. 1, 1890	2,536.00
Mt. Ranier (Wash.)	Mar. 2, 1899	207,360.00
Crater Lake (Ore.)	May 22, 1902	159,360.00
Wind Cave (S. D.)	Jan. 9, 1903	10,522.00
Sullys Hill (N. D.	Apr. 27, 1904	780.00
Platt, (Okla.)	Jul. 1, 1902 Apr. 21, 1904	848.22
Casa Grande Ruin (Ariz.)	Mar. 2, 1899	480.00
Mesa Verde (Col.,	Jun. 29, 1906	42,376.00
Five-mile strip for protection of ruins	Jun. 29, 1906	175,360.00
Hot Springs Reservation (Ark.)	Jun. 16, 1880	911.63
Glacier (Mont)	May 11, 1910	981,681.00
Total		4,606,153.85

No new parks were created during the year.

Congress appropriates annually considerable sums for the maintenance of these parks and large numbers of people visit them each year.

During the year 1910 the number of visitors to these parks was about 200,000, the greatest number being at the Hot Springs Reservation in

Bird Reserves.—More than 50 reservations have been made for the purpose of protecting the birds of the country and their breeding places. These reservations are being administered under the direction of the Biological Survey of the Department of Agriculture and are established by the President's proclamation under his general power of reservation of

NATIONAL MONUMENTS

Name.	State.	Date.	Area.
Devils Tower	Wyo.	Sept. 24, 1906	1,152
Montezuma Castle	Ariz.	Dec. 9, 1906	160
Petrified Forest	Ariz.	Dec. 9, 1906	60,776
El Morro	N. M.	Dec. 9, 1906	160
Chaco Canyon	N. M.	Mar. 11, 1907	20,629
Cinder Cone	Cal.	May 6, 1907	5,120
Lassen Peak	Cal.	May 6, 1907	1,280
Gila Cliff Dwellings	N. M.	Nov. 16, 1907	160
Tonto	Ariz.	Dec. 19, 1907	640
Muir Woods	Cal.	Jan. 9, 1908	295
Grand Canyon	Ariz.	Jan. 11, 1908	806,400
Pinnacles	Cal.	Jan. 16, 1908	2,080
Jewel Cave	S. D.	Feb. 7, 1908	1,280
Lewis and Clark Cavern	Mont.	May 11, 1908	160
Tumacacori	Ariz.	Sept. 15, 1908	10
Wheeler	Col.	Dec. 7, 1908	300
Mount Olympus	Wash.	Mar. 2, 1909	610,500
Navajo	Ariz.	Mar. 20, 1909	600
Oregon Caves	Ore.	July 12, 1909	480
Mukuntuweap	Utah	July 31, 1909	15,840
Shoshone Cavern	Wyo.	Sept. 21, 1909	210
Natural Bridges	Utah	Sept. 25, 1909	2,740
Gran Quibira	N. M.	Nov. 1, 1909	160
Sitka	Alaska	Mar. 23, 1910	57
Rainbow Bridge	Utah	May 30, 1910	160
Colorado	Col.	May 24, 1911	13,883
Devils Post Pile	Cal.	July 6, 1911	800

public lands for public purposes. Congress has recognized these reserves by enacting laws to protect the birds and game in such reserves. No new reserves were made during 1911.

CONSERVATION

MINERAL RESOURCES

DAVID T. DAY.

Conservation is utilization with maximum efficiency and minimum waste. The immediate effect of the conservation policy adopted by the Roosevelt administration, of advocating the leasing of the fuels on the public domain, with the primary object of protecting the small mineral prospector and secondarily of assuring a fair share of the profits of mining to the people rather than to let it all go to corporate holdings, was the withdrawal from entry for the purposes of classification of the known coal, oil, and gas lands and eventually those valuable for phosphates; and under the Taft administration legislation has been secured specifically authorizing these withdrawals.

Coal.—The wisdom of this act can be readily shown as to coal, by the fact that the returns in cash to the people from the sale of coal lands have been much greater since the lands have been properly classified. As examples: 8,218 acres of land have been sold at $50 an acre which would have been sold at $10 an acre (or less) prior to classification. Over 400 acres have been sold at prices between $100 and $270 an acre, while the highest price asked by the Government in the sale of the people's land, has been $608 per acre. This price has always been lower than the prices charged for private lands. The rate charged is based upon the amount of coal per acre. The price per ton is never more than the capitalization of half the rate ordinarily charged for royalty. Frequently it is not more than one-fifth of the customary royalty. Where this low rate per ton results in over $600 per acre the deposits have proved of exceptional thickness. They are comparable with lands in the eastern states, which have been sold privately at $2,000 per acre.

The vastness of this coal conserva-

tion problem can be grasped by the fact that there are estimated to be, west of the 100th meridian, 620 billion tons of anthracite and bituminous coal, 650 billion tons of sub-bituminous, and 720 billion tons of lignite, worth at the low prices charged, at least 40 billions of dollars.

But more significant still is the fact that it is now actually easier for the people to sell coal lands, some of it at more than 60 times their previous value, than it was almost to give them away before their value was established by careful geological measurement. Twelve per cent. more coal land has been sold in the four years of the classification policy than in the previous four years, and for 36 per cent. better returns.

Among actual improvements in coal utilization there stand, first, the improvements in coal consumption due to the studies of the Technologic Branch of the U. S. Geological Survey, and continued by the National Bureau of Mines. Actual results are the improvements in the yield of western lignites by briquetting and by conversion into producer gas. Next is the similar study of methods of consuming bituminous coals, and the resultant economy in buying coal by specification, as worked out for the government's purchases.

Far more important to the safety of life in coal mining has been the allied study of coal explosions, the inspection of explosives, and the rescue system of the Bureau of Mines.

Beyond any doubt the voluntary economies in fuel consumption will be the most important result of conservation for the next few years. The fairly general adoption of producer gas for power, lighting, factory-heating, and chemical purposes in self contained fuel systems, may be regarded as a revolutionary achievement. Good has already been accomplished by extending this study to fuel oils and gases and much more may be expected by the extension of this work to other lines of mining technology.

Petroleum.—The conservation of oil and gas in public lands by their withdrawal has aided in checking the unwise over-production, and it has also preserved for the use of the navy a supply which must be very large in order to provide for all the battleships and other naval craft now being fitted with oil burners. Meanwhile the advances due to economy in private establishments have been too many to enumerate in detail. Oil storage, refining, and distribution have shown great improvement due to private enterprise.

In regard to petroleum the problem of its use with greatest efficiency is one of exceptional difficulty, due chiefly to the erratic course of oil discoveries. Conservation consists in successful storage of the supply and its application to the best uses. This storage problem has always been met in the United States with success that is little short of an industrial marvel. No other country could have accomplished it, for it would not have been possible to provide the steel for tankage within the short time necessary. In Russia and elsewhere great losses by evaporation and leakage have attended the storage of oil in open earthen tanks. Opposed to this is the gratifying spectacle of United States steel going into Mexico so rapidly as to permit the erection of 100 of the largest steel tanks (55,000 bbl. each) in one tank farm, in less than a year. California has afforded another world object lesson in devising and constructing covered cement reservoirs each of half a million tons capacity.

As regards the use of oil, the upward steps have been from the crude use of oil as a fuel under boilers designed for coal, to its application for power purposes in the internal-combustion engines which now promise to dominate in the navy and merchant marine. These advances have been very rapid and satisfactory. Meanwhile refining progress has really just begun. The advances noticed since conservation became a popular movement had their origin in long years of previous patient experiment and their present application is due to the strenuous effort to utilize oil, rather than to popular sermonizing. They include success in continuous distillation, advances in vacuum distillation and thereby better lubricating oils; the distilla-

tion of crude oil clear to the coke stage without interrupting the process, the preheating of oils by the heat of distillates; and in the immediate future one sees success in converting asphaltic oils in California, Texas, and Mexico into the same high-grade products now characteristic of the eastern oils.

Natural Gas.—The years of the conservation period have seen the development by private citizens of natural-gas conservation involving the investment of many millions of dollars. As a result practically no gas is wasted in Pennsylvania and the waste is greatly lessened in West Virginia and Ohio. The greatest achievement for this purpose has been the development of very large gas engines directly coupled to gas compressors by which gas is pumped to distant markets. Much of West Virginia's gas has thus found a market in Pennsylvania and as far as the lake shore in Ohio. The confidence shown in the industry justifying the investment of so much capital in pipe lines and compressor equipment is the most encouraging evidence of progressive conservation.

An ingenious idea for the conservation of natural gas contemplates the use of certain abandoned salt wells in the neighborhood of a large city, as storage reservoirs for natural gas to be pumped under heavy pressure into the cavities left by the salt. Thus, in the summer time, a large supply conveniently located can be accumulated for immediate use in cold weather. This plan is actually in course of execution. Its success is not yet assured but the project is very suggestive.

Metallic Ores.—The efforts at conservation of our metallic ores have continued on much the same lines that have characterized engineering work of the last quarter century. There is no branch of mining activity that has not contributed its share toward saving the metal supply. There is in general little waste in taking ores from the ground. The amount left as pillars decreases as the value of the ore increases. But with the arrival of the ore at the surface, the conservation problems become serious in the waste due to imperfect utilization. This has undoubtedly reached 40 per cent. occasionally in lead and zinc concentration. It has led to much agitation for the legal restriction of the disposal of tailings—the effort being toward the preservation of these tailings to be worked over by more efficient methods at some later time. The list of new concentrators of increased efficiency, including shaking-tables, hydraulic classifiers, etc., is too long for enumeration here.

The Future.—Using the experience of the past three years during which conservation work has come so strongly into the foreground, it may be profitable to forecast the course of conservation progress in the near future. Beyond doubt the most fruitful results will attend the common sense regulation of our public lands. This may go as far as the system of leasing. It will perhaps aid toward adapting fuel production to the actual demand. It may ally the mining industry with rational industrial development and more effectively divorce it from speculation and search for sudden wealth.

Of next importance is the improvement by the mining engineering profession of methods of concentration of metallic ores, and thereby the utilization of ores of lower grade. This feature may perhaps also be aided by local legislation to preserve tailings from concentration plants for possible future retreatment. Of greater benefit, and correspondingly difficult of successful treatment, is the broad policy of greater coöperation between producer, manufacturer, and consumer, by which our valuable stores of crude minerals may be kept at home, and not exported until converted into the most finished forms. No one can doubt the great advantage of such policy in increasing the wealth of American labor and in elevating the grades of work which our workmen perform; therefore, unaided, this movement may be expected to progress even without public agitation, and it may justly be hoped that conservation enthusiasm may be directed to hastening this desirable movement.

Many mineral products may have

a much better market now than later when industrial demands may entirely change. This is best expressed by Waldeman Lindgren, in the Conservation Bulletin of the Geological Survey:

> It is reasonably certain that the industrial development of the world will continue on an ever increasing scale. But who can tell us what methods and materials will be used, and what new discoveries in little explored continents will disclose? Substances now eagerly sought may then be of little value; reserves established by the States may be useless and simply serve to restrict the present development. Legislative interference with production of metals is likely to be futile and probably cannot in the long run successfully interfere with the operation of economic principles based on laws of supply and demand.

No wiser counsel than this can serve to temper the enthusiasm of those who would save everything for a future fraught with uncertainties in industrial method.

FORESTRY

EDWIN A. START

Weeks Law.—After thirty years or more of cumulative educational effort, the need of scientific forestry as a permanent part of our economic organization has come into quite general recognition by the American people. The past year has seen some notable advances. Chief among these in the field of national forestry was the passage of the so-called Weeks Law, or Appalachian Forest Reserve Act, passed by the House in 1910, and by the Senate on Feb. 15, 1911. Under this act an appropriation is made of $11,000,000, in annual instalments for a term of five years, for the purchase of land for national forests on the watersheds of navigable streams, when the maintenance of such forests will tend to promote or protect the navigability of such streams.

National Forest Reservation Commission.—This law is to be administered by a National Forest Reservation Commission, composed of the Secretaries of War, the Interior, and Agriculture, two senators appointed by the President of the Senate and two representatives appointed by the Speaker of the House. The appointed members of this board are Senators Jacob H. Gallinger of New Hampshire and John Walter Smith of Maryland, and Representatives W. C. Hawley of Oregon and Gordon Lee of Georgia. Purchase under the act must be authorized by the Commission upon recommendation of the Secretary of Agriculture, after a report by the Geological Survey "showing that the control of such lands will promote or protect the navigation of streams upon whose watershed they lie."

Appropriations.—The bill as it passed the House carried an appropriation of $1,000,000 for the fiscal year ending June 30, 1910, and $2,000,000 for each succeeding year until June 30, 1915. As the bill did not become a law until the Spring of 1911, and there was not time under its guarded provisions for the expenditure of two million dollars before June 30, 1911, the Controller of the Treasury ruled that the allotment for 1910 and 1911 lapsed. A joint resolution is now before Congress making this sum available up to the expiration of the act.

Nationalization of Forests.—The Weeks law is general in its application, but it is the net result of efforts begun in 1899 to save the fast vanishing forests of the southern Appalachian and White Mountains, which, owing to their interstate topography and relations could not be successfully handled by the states individually. The act makes possible the nationalization of the national forest system, although to a limited extent, because it applies only to the protection of the flow of navigable streams. This limitation was inserted to meet the constitutional objection raised by some of the opponents of the bill against the power of the federal government to purchase land for the maintenance of forests. The power to protect the navigability of streams was recognized under the commerce clause. It is the opinion of many who have carefully studied the forest history

of the world that events will ultimately compel a recognition of the power of Congress to maintain forests for the general welfare of the people, even if land must be purchased for the purpose.

Fire Protection.—The Weeks law further appropriated $200,000 to be used by the Secretary of Agriculture in coöperating "with any state or group of states, when requested to do so," in the protection from fire of the forested watersheds of navigable streams. In the administration of this provision it is required that the state desiring coöperation shall have provided by law for a system of forest fire protection, and the amount appropriated from the national fund shall not exceed that appropriated by the state during the same fiscal year. This is not a continuing appropriation, but it offers an important means of encouraging organized protection against fire—the greatest enemy of our forest wealth—and it is believed that the use of the fund will justify its continuance when the original appropriation is exhausted. Several states have qualified and cooperative agreements have been made with them. They are, with the appropriations in each case: New Hampshire, $7,200; Minnesota, $10,000; New Jersey, $1,000; Wisconsin, $5,000; Maine, $10,000; Vermont, $2,000; Connecticut, $1,000; Oregon, $5,000; Maryland, $600; Massachusetts, $1,800; and New York, $2,000. The national fund is used in these cases for the maintenance of a specified number of patrolmen who are under the direction of the State Forester.

U. S. Forest Service.—The national forests, created by successive reservations of public land, numbered at the close of the fiscal year, June 30, 1911, 150 in the United States, two in Alaska, and one in Porto Rico. The total acreage is 190,608,243, of which 163,793,443 is in the United States, 26,748,850 in Alaska, and 65,950 in Porto Rico. These forests are distributed in twenty states, all but two of these states—Florida and Michigan—being west of the Mississippi River. They are under the management of the United States Forest Service, an administrative bureau of the Department of Agriculture. The chief forester is Henry S. Graves. Over 3,000 persons are employed in the work of the Service, about 18 per cent. of whom occupy administrative, executive, scientific and clerical positions. The remainder are engaged in the management of the national forests as supervisors, deputy supervisors, rangers, guards, field assistants, timber and mining experts, engineers, hunters and clerks. The national-forest states have been since 1906 organized in six districts, each under a district forester with a full administrative organization.

The Forest Service has important functions of education, scientific research, and general investigation of forest subjects, in addition to its work of administration. Its general headquarters are in Washington. In 1910 there was opened at Madison, Wisconsin, by coöperation with the University of Wisconsin, the Forest Products Laboratory, thoroughly equipped for tests and studies of forest products. This is now the headquarters of that branch of the Forest Service.

State Legislation.—The development of popular interest in forestry, stimulated by the terrible forest fires of 1910, which destroyed many millions of dollars of timber and other property and caused the loss of several hundred lives, resulted in considerable legislative activity in several states during the past year. Minnesota, New Hampshire, and Oregon enacted general forest laws, in all of which especial attention was given to protection against fire. New Hampshire had in 1909 reorganized its Forestry Commission and authorized the employment of a state forester. In 1911 the forest law was generally strengthened. The new forest law of Minnesota is regarded as a model of its kind. It reorganizes the forestry work of the state under a board of nine members, which is outside of politics. This board appoints a State Forester, who is the executive officer of the board. The Oregon law likewise provides for a State Forester and is explicit and thorough in its provisions for protection against [illegible] achusetts,

which embarked upon a progressive forest policy in 1904, and has been improving and strengthening its forest laws ever since, made a notable advance in the direction of fire protection this year, providing a special appropriation for that part of the state forest work, with an assistant forester who is an expert in forest-fire work, in charge. In all these new laws it will be seen that the emphasis is upon fire protection, which is the most urgent phase of forest conservation at present in this country. Little else can be done until forest property is made reasonably secure.

Education.—Three American universities, Yale, Harvard and Michigan, now have well-equipped graduate forest schools. The University of Minnesota and Washington offer four-year undergraduate and two-year-graduate courses, and Colorado College, Colorado Agricultural College, University of Georgia, University of Idaho, Purdue University, Iowa State College, University of Maine, Michigan Agricultural College, University of Montana, University of Nebraska, Oregon Agricultural College, Pennsylvania State College, State College of Washington, and the University of Vermont offer four-year courses which provide professional training or specialize in forestry. The Biltmore Forest School is an unattached special school. Thirty-one other schools and colleges give a certain amount of instruction in forestry.

Associations.—From the beginning the forestry movement has been largely carried on in the United States by public-spirited organizations of citizens who have made a vigorous educational propaganda. At the head of these, and oldest of them, is the American Forestry Association (organized in 1882 as the American Forest Congress) which has its general offices in the city of Washington and a nation-wide membership. Of the state associations the oldest and largest is the Pennsylvania Forestry Association. Next in order is the Massachusetts Forestry Association. There are also state societies in all of the New England states except Rhode Island, and in Colorado, Georgia, Indiana, Iowa, Louisiana, Michigan, Minnesota, Nebraska, North Carolina, Ohio, Oregon, Washington, and West Virginia. Some of these associations issue regular bulletins. The Society of American Foresters is a professional organization of foresters. Its *Proceedings* (annual) contain many valuable professional papers.

Publications.—Forestry is represented by two regular magazines. *The Forestry Quarterly* is an able technical publication, and the American Forestry Association publishes an illustrated monthly magazine, *American Forestry*, of a more popular character.

RECLAMATION AND IRRIGATION

ARTHUR P. DAVIS

The Carey Act.—On March 3, 1877, Congress adopted the policy of devoting the desert lands of the arid region to the problem of reclamation, by the passage of the Desert Land Act permitting limited areas to be acquired at a nominal price on a showing that these had been reclaimed by irrigation to the extent prescribed in the act. Experience demonstrated, however, that the provisions of this act were not adapted to insure adequate reclamation, except what could be done by individual efforts or in small tracts. Large areas of land passed out of possession of the Government under the provisions of this act without any real reclamation.

Various efforts to modify this law crystallized on Aug. 18, 1894, with the passage of the so-called Carey Act, which provides machinery for the reclamation of the desert lands under the authority of the state, with certain supervisory powers in the Secretary of the Interior. Under this law and its amendments considerable areas have been reclaimed in Idaho and some other states. Under the provisions of this act 157,035 acres of land have been patented in Idaho, 18,297 in Montana, 50,303 in Oregon and 92,229 in Wyoming.

Projects.	Irrigable Lands, Acres.				Present Available Reservoir Capacity, Acre-Feet.	Canals Miles.	Storage Dams, Volume, Cubic Yards.	Diversion Dams Volume, Cubic Yards.	Dikes Volume, Cubic Yards.	Material Excavated, Cubic Yards.			Concrete Cubic Yards.
	Estimated Total for Com'ted Project.	Area for Which the Service Can Sup'y Water Season of 1911.	Area Irrigated Season of 1911. Under Water Rt Applications.	Area Irrigated Season of 1911. Under Rental Contract or Other Arrangements.						Class 1 (Earth.)	Class 2 (Hardpan.)	Class 3 (Rock.)	
Salt River	230,000	170,000		150,000	1,300,000	554	342,000	48,000	42,700	2,477,000	1,000,000	524,000	331,600
Yuma	131,000	16,000	2,050	8,000		108		441,752	2,784,344	3,884,713	352,785	685,594	83,400
Orland	14,000	14,000		2,551	45,000	93	12,200		4,000	348,388	38,424	2,600	17,350
Grand Valley	53,000												
Uncompahgre Valley	140,000	30,000		24,000		165			800	920,742	543,645	360,216	72,499
Boise	243,000	138,000		121,000	173,000	574	2,523,500	21,749		7,198,150	1,000,450	209,269	62,422
Minidoka	124,100	116,400	35,000	22,000	53,500	585	242,560		750	6,965,106	181,411	411,433	35,046
Snake R. Storage Unit					380,000		37,000			100,000		10,000	3,354
Garden City	10,677					4				66,400			5,338
Blackfeet	133,000					35				738,417	30,475	60,154	452
Flathead	152,000	11,000		2,800	7,500	162	61,206			851,680	37,251	6,905	1,768
Fort Peck	128,000	7,500			3,900	52	34,000			400,000			936
Huntley	32,405	28,805	12,000			270				1,443,000	15,200	10,000	11,300
Milk River	215,000	7,800		2,000		46		16,713	119,500	912,481	7,438	4,411	1,646
St. Mary Storage Unit										275,441	4,681	51,078	
Sun River	322,000	16,346	7,000	170	2,000	117	108,000			643,401	20,737	34,575	4,417
Lower Yellowstone	60,116	40,638	18,375			195		9,017	138,276	6,190,841	182,733	189,111	21,202
North Platte	129,270	97,539	56,440	17,862	1,025,000	584	220,712	4,966	51,435	8,641,294	536,396	199,120	90,794
Truckee-Carson	206,000	50,000	34,000	950	200,000	687		35,831	70,788	9,028,268	84,511	468,534	41,886
Carlsbad	20,267	20,267	13,623	50	47,000	158	145,163		53,565	439,950	18,380	55,400	10,480
Hondo	10,000			1,000	40,000	50	425,050	3,700		772,990	3,000	35,590	3,718
Rio Grande	160,000									55,786	7,402	134,853	1,387
Leasburg Unit		25,000		25,000		6		4,196		302,082	1,300	570	2,966
Missouri R. Pumping Buford-Trenton Unit	12,025	4,050	1,240			15				69,600	50		1,654
Williston Unit	11,289	8,189	3,800			46				219,100	16		2,632
Umatilla	25,000	17,252	3,500	74	50,000	112	793,400	7,506	8,000	2,150,000	88,000	41,500	17,840
Klamath	72,000	30,000	25,736	1,861	662,000	145	56,600	5,180	39,240	1,522,706	291,253	104,724	12,172
Belle Fourche	100,000	47,542	33,339	23	203,770	296	1,546,000	12,149		5,117,710	97,424	41,815	47,684
Strawberry Valley	60,000					3		1,261	1,350	330,757	38,874	76,292	19,183
Okanogan	10,051	10,051	5,000	1,349	15,000	41	336,000	801		630,000	95,000	50,000	2,327
Yakima Storage Unit					82,000		233,852			433,350	900	200	3,764
Sunnyside Unit	98,628	65,000	15,412	43,200		460		2,291	18,000	2,115,600	47,664	46,100	15,095
Tieton Unit	34,500	19,378	6,300	62		159		2,902	584	549,540	359,096	226,922	19,930
Shoshone	164,122	34,852	14,580		458,100	239	75,544	4,951	5,200	1,864,123	51,83[illegible]	312,808	120,068
Totals	3,101,450	1,025,609	287,395	423,952	4,747,770	5,961	7,192,787	622,945	3,338,532	67,658,616	5,136,331	4,353,765	1,066,310

The Reclamation Act.—The law of June 17, 1902, known as the Reclamation Act, provides that the proceeds from the sale of public lands in the arid and semi-arid states shall be used for the construction and operation of irrigation works. Under this act the Secretary of the Interior organized the Reclamation Service, and through this Service is constructing a number of large irrigation systems, the cost to be repaid by the beneficiaries. Such repayments, together with the annual receipts from the sale of public lands, constitute a revolving fund to be used indefinitely in continuing this work.

On June 25, 1910, the President approved an act of Congress authorizing the expenditure of $20,000,000 from the U. S. Treasury to complete and extend the work of the Reclamation Service, in addition to the regular fund which is derived from the sale of public lands. The same act provided that these funds should not be used on any project until a board of army engineers had reported upon its feasibility. A board was accordingly organized and examined each project briefly. They recommended the following allotments to be used from 1911 to 1914, inclusive:

ALLOTMENTS RECOMMENDED BY ARMY ENGINEERS.

Project.	Reclamation Fund.	Loan.
Salt River		$495,000
Yuma	$2,380,462	1,200,000
Grand Valley	500,000	1,000,000
Uncompahgre	2,045,000	1,500,000
Minidoka and Snake	528,000	
Boise	4,585,435	2,000,000
Huntley	110,000	
St. Mary-Milk River	2,950,000	1,000,000
Sun River	3,278,000	
Lower Yellowstone	578,000	
North Platte and Goshen	2,185,000	2,000,000
Truckee-Carson	1,594,000	1,193,000
Rio Grande	1,855,000	4,500,000
Missouri River Pumping	270,000	
Umatilla		325,000
Klamath		600,000
Belle Fourche	480,000	
Strawberry Valley		2,272,000
Okanogan	13,000	
Yakima		1,915,000
Shoshone	2,000,000	
Totals	25,351,897	20,000,000

These recommendations were approved by the President in Jan., 1911, and the Reclamation Service has been proceeding under their provisions since that date.

No construction work has been done during the past year on the Grand Valley, Milk River, Lower Yellowstone, Huntley, Okanogan, and Missouri River Pumping Projects.

ARIZONA

Salt River Project.—The main feature of the Salt River project is the Roosevelt storage dam, which was completed and dedicated by Theodore Roosevelt on March 18, 1911.

This dam is 284 ft. high, and contains 342,000 cu. yd. of rubble masonry. The reservoir covers an area of 16,320 acres, and has a storage capacity of 1,284,000 acre-feet. The spillway is 400 ft. long and is 220 ft. above the stream bed. The stored water is released as needed into the river channel and follows this channel to a point about two miles below the confluence of the Salt and Verde Rivers, where the Granite Reed diversion dam diverts the water into a canal on each side of the river. This diversion dam is 38 ft. high, 1,000 ft. long, and contains 40,000 cu. yd. of concrete. Large sluicing gates are provided at each end of the dam to prevent the heavier sediment from entering the canals, and the lighter and finer particles are carried on to the land, where they serve a very useful purpose in perpetuating the fertility of the soil. Several old canal systems in this valley were purchased by the United States in 1906, and later, and these have been unified, enlarged, and extended and a large mileage of new canals is being constructed. The total length of canals now owned and operated by the United States in Salt River Valley is 554 miles. They command an area of about 230,000 acres, of which about 40,000 acres is so situated as to receive water from the canals, but receives most of its supply from wells, from which the water is pumped by means of power developed at the Roosevelt dam. This method is used also to supply water

to about 10,000 acres on the Gila River Indian Reservation, which receives also flood waters from the Gila River whenever available. There is now developed at the Roosevelt dam about 4,500 h. p., which is transmitted to the pumping district electrically. It is proposed to develop about 9,000 h. p. additional in the Valley at various drops on the canals. This development is now being installed by the Water Users' Association, and will be most used for commercial purposes, while that developed at Roosevelt will be used mainly for pumping.

ARIZONA-CALIFORNIA

Yuma Project.—The Yuma project diverts the water of the Colorado River above the town of Yuma, for irrigation in California and Arizona. The diversion dam is nearly a mile long, and is of the India-weir overflow type. It has withstood without injury the highest recorded flood on the stream it spans. One of the chief problems of this diversion is the disposition of the sediment with which the stream is laden, and which would soon choke any canal system if not prevented. To solve this problem a settling basin is provided at each end of the dam, closed by enormous gates, which may be quickly opened when the basin fills, and the water given all the velocity that the height of the dam will furnish. The rushing flood carries out the sand accumulated in the settling basin, and when this is clear, the gates are closed and the water resumes its course into the canal, after dropping its heavier and coarser particles in the settling basin. The fine, impalpable silt, too light to settle easily, is carried through the canal system to the land and preserves its fertility.

These sluice gates and their powerful controlling mechanism have been completed and work perfectly. About 6,500 acres of land are now being watered from this dam in California, and a tunnel is being constructed which is to carry the water under the Colorado River to the Arizona lands south of Yuma. This tunnel is being built by the pneumatic or compressed air method, as the rock is soft and porous. The completed project will water about 100,000 acres of marvelous fertility, requiring more than 400 miles of canals, and 70 miles of dikes to control the annual rise of the Colorado River.

CALIFORNIA

Orland Project.—The Orland Project provides for the storage of water by means of a masonry dam built at East Park on Little Stony River, and the diversion of its water from Stony Creek near Orland, California. The storage reservoir has been completed with the exception of some work now in progress on the spillway. Its capacity is 45,600 acre-ft., and water is now being delivered to 14,000 acres, through about 100 miles of canals. This project may be extended by constructing additional reservoirs on Stony Creek and its tributaries, and is considered a part of the Great Sacramento Valley project.

COLORADO

Uncompahgre Project.—This project involves the delivery of water to about 140,000 acres of land, the supply for which will be obtained mainly from the Gunnison River. For this purpose a tunnel about 31,000 feet in length has been built and the canal systems are now under construction. Water was delivered through the tunnel for a considerable acreage during 1911.

IDAHO

Minidoka Project.—The Minidoka project provides for the storage of the waters of Snake River and their diversion upon lands in the vicinity of Rupert, Heyburn, and Burley, in Idaho. The principal storage reservoir is at Jackson Lake, Wyoming, and has been completed during the past year. The reservoir covers an area of 22,600 acres, and has an available capacity of 380,000 acre-ft. The dam is 40 ft. high above lowest foundation, and the water is controlled by 20 radial gates, 5 ft. by 8 ft.

Another dam across Snake River

near Minidoka, is a combined storage and diversion dam. Its maximum height is 86 ft., and has an available storage capacity of 60,000 acre-ft. It also serves to raise the water level 42 ft. into canals on each side of the river, which cover by gravity 70,000 acres. In addition to this, an area of about 50,000 acres situated above the level of the dam is irrigated by pumping from the main canal, an average height of 66 ft. The power plant for this purpose is just completed. It utilizes the water that must pass the dam for use further down the river, and passes this through turbine wheels under a head of 46 ft., generating electric current, which is transmitted 13 miles to the pumping stations. The power plant contains five units of 2,000 h. p. each, and the water is lifted by 12 centrifugal pumps, ten of which have a capacity of 130 sec.-ft. each, and 2 have a capacity of 80 sec.-ft. each. Water is ready for delivery to practically all the land in this project, and the major portion is under cultivation.

Boise Project.—The Boise Project in Idaho is one of the largest undertaken by the Reclamation Service. It provides for the storage of the waters of Boise River at Arrow Rock, and at Deer Flat, and their use upon over 200,000 acres in the Boise Valley. The Deer Flat Reservoir has been completed by the construction of two large and one small earthen embankment, containing an aggregate of 2,320,000 cu. yd. The reservoir covers 9,250 acres, and has an available capacity above outlets, of 173,000 acre-ft. Water was delivered for irrigation from this reservoir in 1911. It is filled by a long feed canal heading in the Boise River above Barberton, about 8 miles above the city of Boise. The lateral system has been completed for 120,000 acres of new land. Altogether 580 miles of canal have been built by the Government, and the complete project will have over 700 miles.

The dam at Arrow Rock is to be on the main Boise River about 8 miles below the junction of the North and South Forks. It will be 350 ft. high from its lowest foundation, and will store 230,000 acre-ft. of water. A camp has been established and a railroad to the dam site is nearly completed. Work is well advanced on a large tunnel to carry the water of the river during construction. A power plant to furnish the necessary power is being installed at the Boise diversion dam above Barberton, where about 2,000 h. p. is to be developed.

The Arrow Rock and Deer Flat Reservoirs are designed to control all the available waters of the Boise River in ordinary years.

MONTANA

Sun River Project.—On this project the storage dam on Willow Creek is under construction and nearly completed. This will furnish the late season's supply for the lands for which canals have been provided on the south side of Sun River near old Fort Shaw. It is built of earth, its height is 70 ft., and its storage capacity 16,000 acre-ft. It is capable of being increased to a storage capacity of 80,000 acre-ft. Surveys are in progress to determine the feasibility and cost of a large development on the north side of Sun River, to store water on the Main Trunk of Sun River, and irrigate about 150,000 acres of land. The area for which water can now be delivered is 16,300 acres, of which about one-half is now under cultivation. The crops the past season were very good. About 40 farm units are open to homestead entry, and water is ready for them.

NEBRASKA-WYOMING

North Platte Project.—The North Platte project includes the Pathfinder Reservoir on North Platte River, 50 miles southwest of Casper, Wyo., which covers an area of 21,774 acres, and has a capacity of 1,325,000 acre-ft. This reservoir is capable of controlling the entire flow of the North Platte River in ordinary years, and has now been completed, except a little work now in progress on the spillway weir, and on the upper outlet tunnel.

The waters of the North Platte are diverted by a concrete weir of a maxi-

mum height of 29 ft. and length of 300 ft. near the station of Whalen, on the Burlington Branch. This canal commands an area of 39,500 acres of irrigable land in Wyoming and 107,500 acres in Nebraska. Most of these lands have been settled upon, only 5,000 acres being now open to entry. About 585 miles of canals and distributing laterals have been built by the United States to serve this project, and extensions of these are under construction. The irrigation plan includes the construction of three reservoirs on the tract northeast of Scottsbluff, aggregating about 100,000 acre-ft. storage capacity. These reservoirs are to be filled by surplus waters from the main canal, and by carrying water in the main canal during the spring and fall in the non-irrigating season. The water stored will constitute the supply for lands lying south and east of these reservoirs, the first of which is now under construction. During the season of 1911 about 82,000 acres of land were irrigated from the canal system and good crops were secured which are bringing satisfactory prices.

NEW MEXICO-TEXAS

Rio Grande Project.—The Rio Grande project provides for the storage of water in a very large reservoir to be built near Elephant Butte, which is designed to regulate the entire flow of the Rio Grande in all ordinary years. It will have a capacity of 2,760,000 acre-feet.

Operations on this reservoir have been started by the purchase of the major portion of the right of way, the construction of a railroad track from Engle to the dam site, the construction of a camp, a large reservoir and pumping plant to furnish water for construction purposes, installation of the necessary power plant and the construction of cofferdams and other temporary works. This work is being pushed as rapidly as consistent with economy.

The diversion dam near Leasburg has been in operation for about three years, and has been of great value to the irrigators of the valley in diverting the water of the Rio Grande, which, though intermittent in flow, is of much value for irrigation. This dam and the canal delivering water therefrom are being operated on a rental basis which pays the cost of operation and maintenance of the works used.

The entire project will provide for the irrigation of about 155,000 acres in Texas and New Mexico and 60,000 acre-feet of water will be delivered annually to the canals in Mexico under treaty provisions.

NEVADA

Truckee-Carson Project.—The Truckee-Carson project provides for the storage of water in Lake Tahoe and a number of smaller lakes on the headwaters of Truckee River, and their diversion to the Carson Valley. The main Truckee Canal, with a capacity at its head of 1,400 cu. ft. per sec., was the first large work constructed by the Reclamation Service. It carries Truckee waters to Carson River and discharges into that stream near Lahontan, at an elevation of 120 ft. above the river bed. Just below its mouth the Reclamation Service is building a dam to store its waters and those of the Carson, in a reservoir with a capacity of 290,000 acre-ft. It will cover an area of about 11,000 acres. The waters of the Truckee Canal are dropped through turbine wheels to generate 1,000 kw. of power for the construction of the dam, and to be used later for pumping. This reservoir, when completed, will provide a water supply sufficient for about 100,000 acres in addition to the 40,000 acres now irrigated.

OREGON

Umatilla Project.—The Umatilla project diverts water from the Umatilla River about two miles above Echo, and carries it by means of a canal to a storage reservoir in Cold Springs Canyon, where an earthen dam 100 ft. high forms a reservoir covering 1,500 acres, and holding 50,000 acre-ft. of water. From this reservoir, the water is distributed to lands lying about the town of Hermiston and along the Columbia River.

The only construction work done during the past year is the extension of the canals and ditches. There are now about 150 miles of canal in service. The Service was prepared to supply water to 17,000 acres in 1911. Investigations are being completed of the feasibility and cost of a storage reservoir on the Umatilla River near Hermiston, to store water for use on about 40,000 acres of land to the northwestward along the Columbia River. This extension of the Umatilla project, known as the "West Extension," has not yet been authorized by the President.

OREGON-CALIFORNIA

Klamath Project.—The Klamath project is an interstate enterprise involving the reclamation of lands in Oregon and California by the use of the waters from Upper Klamath Lake and Lost River. This project contemplates the irrigation of about 100,000 acres of land, of which approximately one-third is now submerged by Tule Lake. This will be reclaimed by diverting the waters of Lost River, its principal feeder, into the Klamath River by means of a dam and canal which are now under construction. The lake is gradually declining under the influence of evaporation and when dried will be cultivated by means of irrigation. About 30,000 acres on this project are now under ditch and good results are being obtained from irrigation thereof.

SOUTH DAKOTA

Belle Fourche Project.—This project provides for the diversion of water from Belle Fourche River by means of a diversion dam near Belle Fourche, South Dakota, and a feeder canal into a storage reservoir formed by the construction of a large earthen dam on Owl Creek. From this reservoir, the waters are distributed to the irrigable lands. The diversion dam, headworks, and feeder canal have been completed and the finishing touches are being given to the large storage dam. One division of distributing canals irrigating lands along the canal south of Belle Fourche River has also been completed, and the first division of the North Canal is completed and in service. Construction is in progress on the second division of the North Canal and the lateral system thereunder. The total length of canals and distributaries completed is about 300 miles. These canals are sufficient to distribute water to 47,500 acres, of which about 19,000 acres were irrigated during the past season. The season of 1910 was unusually dry and the greater portion of the land had to be irrigated before the grain would sprout. In 1911, still worse conditions of drought prevailed, and there was some shortage of crops upon the irrigated land.

UTAH

Strawberry Valley Project.—This project comprises a storage reservoir on Strawberry River, which is tributary to the Green River, a tributary to the Colorado River. The stored water will be diverted through a tunnel about 19,200 ft. in length into Diamond Fork, a tributary of Spanish Fork River, tributary of the Great Salt Lake. The water is distributed to lands on both sides of Spanish Fork River east of Utah Lake. Power has been developed for the construction of the tunnel, and when this is completed will be used for pumping water from underground, to serve the double purpose of relieving water-logged lands and supplying additional water for irrigation. The diversion dam, the power canal, and power plant have been completed and construction is in active progress upon Strawberry Tunnel and the storage dam in Strawberry Valley. Considerable water has been developed by the excavations in the tunnel which greatly hampers the operations therein. About 12,000 ft. of the tunnel has been excavated and 6,200 ft. has been completely lined. This project will eventually reclaim about 50,000 acres.

WASHINGTON

Yakima Project.—Work was undertaken in the Yakima Valley in

1906, and the Sunnyside canal system was purchased for the purpose of enlargement and extension on June 23, 1906. At that time, the low-water flow of the Yakima River in the latter part of the ordinary irrigation season was entirely diverted for irrigation uses, and the extension of irrigation depended upon storage of winter and flood waters for use during August and September of each year. The project provides for the storage of waters of Yakima River and its tributaries in Kachess, Keechelus, and Clealum, and Bumping Lakes, and in a reservoir at McAllister Meadows on the Tieton; the diversion of the waters from Yakima River for the irrigation of about 60,000 acres of land in the vicinity of Ellensburg, comprising the Kittitas Unit; the diversion of water on the east bank of Yakima River below Union Gap for the irrigation of 100,000 acres of land comprising the Sunnyside Unit; the diversion of water from Tieton River for the irrigation of 35,000 acres of land west of North Yakima, comprising the Tieton Unit; and the diversion of water from west bank of Yakima River below Union Gap for the irrigation on the Yakima Indian Reservation of 116,000 acres of land; also a diversion on the left bank near Prosser for the irrigation of 130,000 acres of land on both sides of the Yakima River near its mouth, known as the Benton Unit.

When the Sunnyside Canal was purchased, the diversion dam and headworks, being in precarious condition, were rebuilt on substantial design and improved wasteways were constructed at Zillah, and at Sulphur Creek. The enlargement of the main canal is now in progress to provide water for additional areas to which the canal and laterals are being extended. The Mabton and Prosser Divisions with distribution system are under construction. The Tieton Unit has been nearly completed, consisting of a storage dam at Bumping Lake, a diversion dam, main canal, and a complicated lateral system to deliver water to 35,000 acres. Construction work is in progress on the storage dam at Lake Kachess and some storage has been provided at Lakes Keechelus and Clealum by the construction of temporary dams, which will serve as cofferdams when the higher permanent structures are built. The dam now under construction at Lake Kachess will when completed have a maximum height of 68 ft., and will store 210,000 acre-ft. of water. On all the units of this project, public lands are entered upon very quickly after they become available, so that no public lands are now available to entry. During 1911, the Service was prepared to deliver irrigation water to 65,000 acres on the Sunnyside Unit, of which 58,600 acres was actually irrigated, and to 19,000 acres on the Tieton Unit, of which 6,362 acres was actually irrigated.

The principal crops grown on the Sunnyside Unit are fruits, forage plants, and vegetables. The fruit crop in this region in 1910 was the heaviest ever produced. It is estimated that the total value of crops in this district, excluding the land planted to young orchard and therefore non-productive, averaged about $80 per acre, without including the value of live stock, nor of dairying and poultry products, and honey, of which the production was also considerable. The Tieton Unit is being mostly set to fruit, although considerable quantities of potatoes, alfalfa, and small grains were raised in 1911.

WYOMING

Shoshone Project.—This project provides for the storage of flood waters of Shoshone River in a reservoir controlled by a high masonry dam about eight miles above Cody; the diversion of water from Shoshone River by a dam at Cody, 16 miles below the reservoir, upon lands in the neighborhood of Ralston, Powell, Garland, and Frannie; the diversion into the Willwood Canal for the irrigation of lands on the south side of the Shoshone River, and the diversion into the north side high line on Shoshone dam for the irrigation of lands lying on the north side of the Shoshone River above the Garland system.

Of the above, the operations to

date have completed the Shoshone storage dam, the Corbett dam, the Corbett tunnel, Garland canal, about 12 miles of the Frannie Canal, and the lateral and distributing system for approximately 40,000 acres in the vicinity of Ralston, Powell, and Garland. These canals are being extended and completed. The settlement on the project indicates a steady and healthy growth. About 20,000 acres of land under this project are now open to homestead entry and water is ready for delivery therefor. This is the largest area open to homestead entry on any project of the Reclamation Service, and the conditions are very favorable for the success of general farming and stock raising.

INDIAN RESERVATIONS

The Secretary of the Interior utilizes the organization and experience of the Reclamation Service, to construct a few of the larger irrigation systems authorized by Congress on the Indian reservations of the West. The principal work of this character is on the Flathead, Blackfeet, and Fort Peck Reservations, all in Montana.

The Flathead Project contemplates the irrigation of about 150,000 acres of land in the Jocko, Mission, Little Bitter Root, and Camas Valleys, all in the Flathead Indian Reservation. To accomplish this, 16 small reservoirs will be provided having an aggregate capacity of 136,000 acre-ft., and one large one, Flathead Lake, which is capable of future development to an available capacity of 1,800,000 acre-feet. It will also require over 800 miles of canals and laterals, of which 162 miles have now been constructed.

The Blackfeet Project consists of five small irrigation systems, taking water from creeks on the reservation, all tributary to Marias River. The aggregate area to be irrigated is about 130,000 acres; 35 miles of canals have been constructed, and this work is now in progress. A reservoir is being constructed at Two Medicine Lake, where 16,000 acre-ft. of water will be stored. Two other reservoirs are contemplated, having storage capacities respectively of 60,640 and 29,000 acre-ft.

The Fort Peck Project, when complete, will provide irrigation for about 128,000 acres of land in the valley of the Missouri River. The main feature will be a canal from the Missouri River, to carry 800 cu. ft. of water per sec., and water nearly 70,000 acres of land. Five small systems to take water from small tributaries of the Missouri are proposed, and two of these are under construction, about 50 miles of canals having been completed.

HIGHWAYS

LOGAN WALLER PAGE

The year 1911 has witnessed marked progress in the matter of highway improvements. Never before has there been more enthusiasm or greater activity along this line. The expenditures and construction projects far exceed those of any previous year, all of which is due to a strong and healthy sentiment for better roads and to a realization on the part of the people that it is to their best interests to improve our highway conditions. From this fact, it may be stated that the present movement for improved highways rests upon a very substantial foundation, and the progress of this year is but an indication of what may be expected in the future.

Improvement Associations.—During the year numerous county, state and national highway associations have been organized. In addition, many organizations and associations, hitherto manifesting no interest in road matters, have appointed committees to look after and promote this line of improvement, or are otherwise actively devoting themselves to the cause. Chambers of commerce, boards of trade, and other commercial bodies in every state in the Union are having their names enrolled among those organizations

having for their purpose, partially at least, the promotion of highway improvements.

A number of these associations are working for the improvement of specific highways. The highways in such instances are continuous or trunk lines, connecting distant points in the same state or in different states, among which are the "Ocean to Ocean Highway," beginning at some point on the Atlantic Ocean and terminating on the Pacific coast; the Montreal to Miami Highway, extending from Montreal, Can., through New York, Washington and the capitals of Virginia, North Carolina and South Carolina to Miami, Fla.; the Pacific Highway, running from some point in Canada, on the Pacific coast, to San Diego, Cal.; and the Clay-Jackson Memorial Highway, extending from Niagara Falls, N. Y., through Zanesville, O., Nashville, Tenn., and on to New Orleans. There are other highways of almost equal importance and extent being promoted at this time, aggregating a total of about 15,000 miles. Of course, the improvement of all of these roads will never be accomplished as one single project, but the different states through which they pass are taking up the work by sections, and the hope may well be entertained that in the near future these improved sections will be so connected up as to bring about a realization of the projects for which these associations are striving.

Road Improvement Trains.—During the year a novel plan for encouraging highway work was the operation of road improvement trains by the Office of Public Roads, of the U. S. Department of Agriculture, in coöperation with several railroad companies. The first of these was operated over the lines of the Pennsylvania Railroad within the State of Pennsylvania, the State College of Pennsylvania and the Pennsylvania State Highway Department also cooperating. The train consisted of four cars and an engine. Two flat cars were devoted to road machinery, including home-made devices, such as road drags and road rollers. A passenger car was fitted up with a stereopticon apparatus for giving illustrated lectures. A large postal car was equipped for exhibiting models of standard types of road construction, and bromide prints of improved and unimproved roads throughout the United States were displayed on the walls of the car. The models showed the most approved methods of building earth, sand-clay, gravel, macadam, brick and bituminous macadam roads. Also a miniature model of a rock quarry and crushing plant, together with a miniature road roller, in actual operation, was included among the exhibits. The tour of this train began Jan. 25, and ended March 28. During this time 174 lectures were given and the exhibit shown at 165 places. Approximately 53,000 people attended both lectures and exhibits. At many places the crowds were so large that the lectures had to be repeated, while at others it was found necessary to adjourn to a hall or deliver the lectures out doors from the flat cars.

The Pennsylvania Railroad supplied the cars and transportation, together with halls for the night meetings. It also advertised the meetings by having large posters prepared, which were placed conspicuously in the railroad stations and at other public places. The State Highway Department furnished views of the state work, as well as lecturers with slides for the lecture work. The State College had general charge of the work, including press publicity and the furnishing of stereopticon apparatus. The U. S. Office of Public Roads furnished the models or exhibits and bromide prints in addition to two lecturers with slides for giving illustrated lectures.

This tour excited so much popular approval and appreciation that other railroad companies have taken up a similar line of work. Immediately upon completion of the tour over the Pennsylvania line, the Southern Railway arranged with the Office of Public Roads for a similar tour over its lines. The Southern Railway train began its tour at Mobile, Ala., May 1, and concluded at Lake Butler, Fla., on Oct. 27, having traversed all lines of the Southern Railway and made from one to two stops every day during that period. The equip-

ment of this train consisted of three cars which, in most cases, were handled by regular trains. One coach, used for lectures, was equipped with stereopticon apparatus, and another was a passenger coach with the seats removed and models installed showing thirteen of the standard types of road construction, the models being the same as were used on the Pennsylvania train. The third car was a private car for the accommodation of the party accompanying the train.

On Oct. 9, the Nashville, Chattanooga & Saint Louis Railroad began the operation of a similar train over its lines. This tour required only about one month. In addition, the Atlantic Coast Line started a similar train from Richmond, Va., the latter part of November for a tour of about four months over its lines. The effect of this work has been so satisfactory and the appreciation of the public so keen, that other railroad companies contemplate the operation of similar trains just as soon as necessary arrangements can be made. Among these are the Sea Board Air Line, the Norfolk and Western and the Frisco System.

Dust-Prevention Experiments.—The effect of modern traffic conditions on improved roads has introduced new highway problems. Prior to the advent of the automobile, dust on roads occasioned no great nuisance and the traffic did not so much have the effect of destroying the bond of the road. The automobile, however, passes over macadam roads at a high rate of speed, lifts a great cloud of dust, consisting of the finer particles or binding materials, from the road surface and the wind blows it away. This process is repeated until the road surface is left devoid of binding materials and disintegration sets in immediately. To meet this condition, a number of so-called dust preventive preparations have been introduced for treating road surfaces so as to allay the dust and prevent this injury from automobile traffic.

This subject is of great interest to the public, and the U. S. Office of Public Roads started some experiments last year to ascertain the relative merits of various of these preparations. These experiments are being conducted on some roads at Chevy Chase, Md., and District of Columbia. Eight different preparations are being used, each furnished by the manufacturer, and the work is done according to the manufacturer's specifications. Experimental stretches of road treated with the different preparations are subjected to the same degree and kind of traffic and their wear observed over long periods. As yet, of course, nothing can be said as to the results and it will probably be several years before definite conclusions can be drawn.

State Aid.—One of the most noteworthy features of the road movement for the year is the advance in the principle of state aid. The policy of state aid was first adopted by the State of New Jersey in 1891. At that time practically all road work throughout the entire United States was in the hands of local authorities who lacked proper information on the subject and consequently inefficient administrations existed in every state. With the inception of the state-aid movement in New Jersey, however, a better system of administration was introduced. The New Jersey law was at first very restricted in its operations and limited in its appropriations, but it was soon discovered that the principle of it was right and its scope and appropriations were immediately enlarged. Up to Dec. 31, 1910, the state-aid appropriations aggregated $3,059,882.70 and 1,562 miles, or more than 10 per cent., of the roads of the state had been thus improved.

The success of state aid in New Jersey induced other states soon to adopt similar laws. In fact, the procession of other states entering upon the state-aid column has been continuous ever since the successful establishment of the New Jersey State Highway Department, so that to-day 37 out of the 48 states in the Union have adopted this principle in some form or other. During last year four new states, namely, Alabama, Oklahoma, South Dakota and Wyoming, have enacted state-aid laws. The movement is still progressing and nine other states, of the

APPROXIMATE ROAD EXPENDITURES, 1911

State.	State Aid.	Local Bond Issues. *a*	Local Revenues. *	Total.
Alabama	$154,000	$2,330,000	$1,000,000	$3,484,000
Arizona	150,000	.....	175,000	325,000
Arkansas	.....	.....	2,450,000	2,450,000
California	2,067,500*b*	1,500,000	3,500,000	7,067,500
Colorado	162,000	.....	1,000,000	1,162,000
Connecticut	2,000,000*	.....	2,275,000	4,275,000
Delaware	30,000	300,000	100,000	430,000
Florida	.....	755,000	750,000	1,505,000
Georgia	.....	.....	2,500,000	2,500,000
Idaho	53,000	.....	500,000	553,000
Illinois	65,000	.....	5,000,000	5,065,000
Indiana	.....	.....	4,500,000	4,500,000
Iowa	.....	.....	3,500,000	3,500,000
Kansas	6,500	93,356	1,500,000	1,599,856
Kentucky	.....	.....	2,500,000	2,500,000
Louisiana	313,931	.....	1,052,926	1,366,857
Maine	250,000	.....	2,000,000	2,250,000
Maryland	1,250,000	.....	1,000,000	2,250,000
Massachusetts	1,000,000	.....	2,500,000	3,500,000
Michigan	250,000	2,216,000	3,500,000	5,966,000
Minnesota	79,300	.....	2,000,000	2,079,300
Mississippi	.....	1,130,000	2,000,000	3,130,000
Missouri	300,000	.....	2,500,000	2,800,000
Montana	.....	.....	500,000	500,000
Nebraska	.....	.....	1,000,000	1,000,000
Nevada	.....	.....	50,000	50,000
New Hampshire	375,000	.....	1,000,000	1,375,000
New Jersey	500,000	.....	4,500,000	5,000,000
New Mexico	100,000*	.....	200,000	300,000
New York	5,000,000*	.....	7,000,000	12,000,000
North Carolina	5,000	2,500,000	2,000,000	4,505,000
North Dakota	.....	.....	1,000,000	1,000,000
Ohio	600,365	.....	6,000,000	6,600,365
Oklahoma	5,000	.....	1,500,000	1,505,000
Oregon	.....	1,500,000	2,000,000	3,500,000
Pennsylvania	4,000,000	.....	7,500,000	11,500,000
Rhode Island	97,000	.....	500,000	597,000
South Carolina	.....	100,000	1,000,000	1,100,000
South Dakota	.....	.....	500,000	500,000
Tennessee	.....	1,400,000	2,500,000	3,900,000
Texas	.....	1,600,000	6,000,000	7,600,000
Utah	355,750	.....	500,000	855,750
Vermont	450,000	.....	1,000,000	1,450,000
Virginia	300,000	2,454,000	1,250,000	4,004,000
Washington	900,000*	.....	2,000,000	2,900,000
West Virginia	.....	625,000	1,000,000	1,625,000
Wisconsin	390,000	.....	3,000,000	3,390,000
Wyoming	10,000	.....	500,000	510,000
Total	$21,219,346	$18,503,356	$101,802,926	$142,225,628

* Estimated.
a Other local bond issues, but information lacking.
b Just begun expenditure of $18,000,000 state bond issue for constructing state roads.

eleven not having yet enacted laws on this subject, have bills pending before their several legislatures for that purpose.

The state aid given does not always consist of money. Many states merely have state highway departments for giving engineering advice and assistance. Some only furnish convict labor, while others contribute money aid, either alone, or in conjunction with advice and engineering assistance, or convict labor, or both. (See XVII, *Prevention, Correction, and Charity.*)

Among those states providing merely engineering assistance and advice are Iowa, Kansas and North Carolina. Georgia, North Dakota and Oregon only furnish convict labor. Florida has authority of law for working some of its state convicts upon its highways, but as yet advantage has not been taken of this law. Georgia passed an act in 1908 authorizing the working of both state

and county convicts upon its public highways, and to-day more than 4,500 convicts are at work on its roads. The State of Illinois operates a rock-crushing plant with convict labor and furnishes the crushed stone produced to the various counties throughout the state free on board cars at the quarry. This is the only aid, aside from advice and engineering assistance, given by Illinois. California also works convicts in operating rock-crushing plants, the crushed stone being furnished to the counties at the cost of production plus 10 cents per ton. Arizona, California, Colorado, Louisiana, Maryland, Michigan, Missouri, New Mexico and Virginia provide both convict labor and money aid. Wyoming and Oklahoma furnish convict labor and engineering assistance. All of the other state-aid states, namely, Alabama, Connecticut, Delaware, Idaho, Maine, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Washington and Wisconsin give money aid with advice and engineering assistance. Trunk line roads are being constructed by the following states: Arizona, California, Colorado, Connecticut, Maryland, New Hampshire, New Mexico, New York and Vermont, the entire cost being paid by the states. (See also XXVII, *State Geological Surveys.*)

Bond Issues.—In addition to direct appropriations several states have issued bonds in large amounts for state-aid and trunk-line construction. Among these are California, which has issued $18,000,000 in bonds; Connecticut, $4,500,000; Maryland, $6,000,000; Massachusetts, $2,500,000; New Hampshire, $1,000,000, and New York, $50,000,000, making a total of $82,000,000 in bonds issued by these states. A part of the proceeds of these bonds is being expended in the states mentioned. In addition to this, Rhode Island voted at the general election in November of last year on a bond issue of $600,000. Colorado is now planning and agitating an issue of $10,000,000 in bonds, for which a constitutional amendment will be necessary and this will be voted on in November, 1912. Alabama and Pennsylvania are each agitating a road bond issue of $50,000,000, making a total of $110,600,000 now being considered in these four states. (See XXXII, *Civil Engineering.*)

State aid not only helps to provide funds for prosecuting the work of road improvement, but it provides skilled supervision. It guarantees to the state and to the local community or county that the funds raised and expended for road purposes will be properly and wisely invested. This is one of the chief advantages and most beneficial results of having a state highway department. Such a department can be well organized, the road laws of the state efficiently administered and road work in the state properly supervised.

It is impossible at this early date to give exact data as to the miles of road improved during the year, but road expenditures last year exceeded that of any previous year. The table on the preceding page shows the approximate expenditures by states based upon the latest and most authentic information available. Of course, the figures given are subject to slight modification in the final returns.

WATERWAYS

E. N. Johnston

Appropriations.—The River and Harbor Act of Feb. 27, 1911, appropriated a total of $23,855,342, and authorized the Secretary of War to enter into contracts for not to exceed $13,101,645 additional. These funds were for use in prosecuting or maintaining 236 projects. In addition to these sums, the Sundry Civil Act of June 25, 1910, appropriated $7,028,077 for payment on contracts previously authorized. The total amount expended on rivers and harbors during the year ending June 30, 1911, was $32,457,012.

Harbor Improvements.—The en-

trance channel to Boston has been excavated to a 35-foot depth, with a least width of 540 ft., and work is still under way. The present project is for a channel 35 feet deep, and from 1,200 to 1,500 ft. wide.

The new Ambrose channel entrance to New York Harbor was widened so that the 40-ft. channel is now from 1,200 to 1,900 ft. wide. This channel will be widened to 2,000 ft. throughout its length of 7 miles.

On the Delaware River, between Trenton and Philadelphia, a depth of 12 ft. will be obtained, while at and below Philadelphia a channel 35 ft. deep and 800 feet wide, with increased width at the bends from Philadelphia to the sea, is to be provided. The estimated cost is about $11,000,000.

At the entrance to Norfolk, the channel is being deepened to 35 ft. at a cost of $1,712,500. Substantial progress was made during the year, a 30-ft. channel having already been provided.

At Cape Fear River, below Wilmington, a plan for enlarged improvement was in course of preparation during the year. Above Wilmington work was begun to provide a depth of 8 ft. to Fayetteville by the construction of 2 locks and dams.

The entrance to the harbor of Charleston, S. C., has a channel 26 ft. deep. A new project provides for an entrance channel 28 ft. deep, 500 ft. wide between the jetties, and 1,000 ft. wide beyond them, thus straightening the outer portion of the channel over the bar. Substantial progress was made during the year.

At the mouth of the St. John's River, Fla., the channel is at least 24 ft. deep. During the year progress was made on the new 30-ft. channel project.

A considerable portion of the entrance channel to Tampa, Fla., on Hillsboro Bay, was deepened during the year from 20 to 24 ft. This entire channel will be at least 24 ft. deep when completed, and extensive channels giving access to new wharfage areas will be provided.

In 1909 a draft of between 23 and 24 ft. could be carried over the shoalest part of the dredged channel in Mobile Bay, which is 33 miles long. A new project provides for a channel 27 ft. deep and 200 ft. wide.

The work of improving the Southwest Pass at the mouth of the Mississippi River is now under way. A channel 35 ft. deep, 1,000 ft. wide and 7 miles long across the bar is to be obtained. The jetties have been carried well toward completion. On April 18, 1911, there was depth sufficient to permit a vessel drawing 30½ ft. to go to sea through this channel.

The entrance to San Diego Harbor, Cal., has been deepened to 27 feet, and work is under way to provide a channel 30 ft. deep and 600 ft. wide.

Substantial progress on dredging the inner harbor at Los Angeles was made during the year, and the breakwater was practically completed. When completed this harbor will be one of the finest in the world.

A new project for the improvement of Oakland Harbor, Cal., provides for a channel 30 ft. deep and 500 ft. wide up to the tidal basin, 25 ft. deep and 300 ft. wide around the basin, and for an increased depth in the tidal canal from 8 ft. to 18 ft. The estimated cost is about $1,100,000. Contracts for part of the work were entered into during the year, and the work of dredging was commenced.

At the mouth of the Columbia River, work is soon to be commenced on a jetty at the north side of the entrance, which, in conjunction with the present south jetty, is to provide a depth of 40 ft. across the bar. Up to Portland, Oregon, the present depth is 24 ft. at low water. The construction of two powerful government dredges, to be used in obtaining a 30-ft. depth, from Portland to the mouth of the Columbia, has been commenced.

At the entrance to Gray's Harbor, Wash., work has been commenced to extend the north jetty to the length of the south jetty, about 3½ miles.

Puget Sound-Lake Washington Waterway.—During the year, work was begun on what is called the Puget Sound-Lake Washington Waterway, a canal to connect Lakes Union and Washington with Puget Sound.

Lake Union, which is 4 miles east of Puget Sound, has a depth of at least 40 ft. over an area of about 500 acres, while Lake Washington is about 19 miles long by 2 miles wide. The project contemplates the excavation of a channel across the neck of land, 2,000 ft. wide, separating the lakes, and the lowering of Lake Washington to the level of Lake Union; the excavation of a canal 25 ft. deep from Lake Union to the western end of Salmon Bay, where a double lock will form the connection between the lake and sound levels; and enlargement of the channel leading from the lock site to Puget Sound. The work will result in the formation of a single fresh-water harbor with a shore line about 100 miles in length. A local assessment district has been formed to coöperate with the United States in this work.

River Improvements.—Rapid progress was made upon the new canal and fourth lock in the rapids of St. Mary's River, at Sault Ste. Marie, Mich. This new lock will be 80 ft. wide by 1,350 ft. long, with a depth of 25 ft. over the miter sills. It will be connected with the river above the rapids by a separate canal, to be excavated mainly in rock to a width of 300 ft. The cost of the lock and canal will be about $6,200,000.

The removal of rock from Limekiln Crossing, in the Detroit River, has resulted in a depth of 20 ft. The recent project provides for two channels in the portion of the river near Bois Blanc Island; an upbound channel skirting the Canadian shore to be 21 ft. deep by 600 ft. wide, and a downbound channel on the opposite side of the island, to be 450 ft. wide where it passes through rock. The work was practically completed during 1911.

The channel at the mouth of the Ashtabula River, forming the harbor of Ashtabula, Ohio, is now at least 20 ft. deep. The new work includes extension of the west breakwater to shore and 1,700 ft. farther lakeward, and the construction of a new easterly breakwater 5,400 ft. long with an entrance channel 600 ft. wide.

The Ohio River is to be improved by 54 locks and movable dams, to provide a least depth of 9 ft. throughout its 967 miles. Twelve dams have been completed, and ten are under construction. The work will cost somewhat more than $60,000,000.

In 1907 a project was adopted to obtain a least depth of 6 ft. throughout the upper Mississippi River, above the mouth of the Missouri. This will be done by a further narrowing of channels. The project includes a lateral canal around Rock Island Rapids, dike construction, and a certain amount of auxiliary dredging. The estimated cost is $20,000,000. The present work upon the Mississippi River below the Missouri is to obtain an 8-ft. channel above the mouth of the Ohio and a 9-ft. channel below. The work includes bank revetment, dredging and levee construction. The river below St. Louis is now in as good condition for navigation as the non-tidal rivers of Europe.

A project for the canalization of the Cumberland River between Nashville and the Ohio River is now in force. Five locks and dams, known as Locks B, C, D, E, and F, are to be built below Lock A (41 miles below Nashville), at an estimated cost of $3,066,122. Work on Locks B and C is soon to be begun.

During the year a lateral canal 8 miles long, around the Colbert Shoals of the Tennessee, was completed. A lock at the lower end of the canal affords access from the river below the shoals.

In the Tennessee River at Hales Bar, a lock, dam and power house are being built at the expense of a water-power company, except that the United States pays the cost of lock gates and lock machinery. The dam will provide a navigable depth throughout more than 40 miles of river. The lock and power house have been practically completed, as has also more than one-third of the dam.

The improvement of the Black Warrior, Warrior and Tombigbee Rivers, in Alabama, by the construction of 17 locks and dams, has been completed, except for dams Nos. 2 and 3, Tombigbee River, and No. 17, Black Warrior River. When completed, a 6-ft. navigable depth from

the Alabama coal fields to Mobile will be provided. During the year, Congress provided for the construction of dam No. 17, with a lift of 63 ft. instead of 21 ft., as had been previously planned. This high dam will provide for a slackwater navigation as far up the Mulberry Fork of the Black Warrior River as Sanders Shoals, and as far as Nichols Shoals on the Locust Fork, and will take the place of five low dams.

The National Waterways Commission, created by the act of March 3, 1909, continued work during the year. The act of Feb. 27, 1911, provided for an extension of the term of service of this commission until Nov. 4, 1911. It also provided for investigations by the commission as to the advisability of construction of proposed canals from Lake Erie to the Ohio River near Pittsburg, at the expense of local interests, and from Lake Erie at Toledo to Lake Michigan near Chicago.

Work on the reports prepared in compliance with the act of March 3, 1909, on a proposed intra-coastal waterway from Boston, Mass., to the mouth of the Rio Grande, Texas, was continued during the year, and at its close the reports were about ready for submission to Congress.

The various waterway associations held their regular annual meetings. These associations have done much to influence public opinion in favor of waterway improvements, one of the important results being the inauguration of the practice of enactment of an annual river and harbor act, which makes it possible to prosecute the work much more rapidly and economically than would otherwise be possible.

THE PANAMA CANAL

FRANCIS G. WICKWARE

Appropriations.—The total appropriations made by Congress available to June 30, 1911, amounted to $248,001,468, or 66 per cent. of the total estimate of $375,701,000 for the complete work. By an act approved March 4, 1911, additional appropriations were made for the fiscal year 1912, amounting to $45,560,000, exclusive of fortifications, leaving $81,639,531 of the total estimated cost of the canal to be appropriated. By June 30, 1911, $225,470,053 had been charged into the work, $33,048,608 of which was expended during the last fiscal year.

Status of the Work.—The Annual Report of the Isthmian Canal Commission, covering the fiscal year ended June 30, 1911, which appeared early in November, reported progress during the year of a nature to lend encouragement to Col. Goethals' hope that the canal will be open for traffic by Jan. 1, 1914. Of the total of 195,323,379 cub. yd. of excavation, 142,967,554 cub. yd. had been removed by June 30. Between July 1 and Oct. 31, a total of 10,088,086 cub. yd. additional had been removed. The material remaining to be excavated on Nov. 1 exceeded by slightly over 10,000,000 cub. yd., the 32,209,035 cub. yd. removed in the twelve months ended Sept. 30.

Atlantic Division.—Excavation at the site of the Gatun locks was delayed by several slides, especially in the lower lock; nevertheless, at the close of the fiscal year the entire lock excavation was practically completed. Concrete to the amount of 911,137 cub. yd. was deposited in the lock foundations, floors and walls, bringing the masonry work of the Gatun locks to 68.34 per cent. of the estimated total. Between June 30 and Sept. 30, 195,272 cub. yd. of masonry was added to the locks.

At the Gatun dam, the dry fills of the portion east of the spillway were raised during the fiscal year from elevation 65 to elevation 85, and the hydraulic fill between them from elevation 51 to elevation 73. On the west side, the north and south dry fills were raised, respectively, 30 and 32 ft., to elevations 60 and 67, and the hydraulic fill 41 ft., to elevation 57. The amounts of dry and hydraulic fill were, respectively, 2,060,186 and 3,758,870 cub. yd. The dam material in place on June 30 was 74 per cent. of the estimated total; the

concrete spillway was 66 per cent. completed. In the three months ending Sept. 30, the additions to the dam were 846,174 cub. yd. wet fill, and 628,919 cub. yd. dry fill; and to the spillway 14,635 cub. yd. of concrete.

Excavation in the canal prism in the Atlantic division totalled 5,707,139 cub. yd. during the fiscal year. During the three months July-Sept., the excavation for all purposes was 1,443,682 cub. yd.

Central Division.—The total amount removed from the Chagres section of the Central Division during the fiscal year was 2,301,000 cub. yd., leaving this section 95.68 per cent. completed. From Culebra Cut 16,221,672 cub. yd. was removed, leaving 23,929,140 cub. yd. to be excavated; the Cut was 73.25 per cent. completed on June 30. This estimate makes ample allowance for slides, which were particularly troublesome during the last fiscal year. Over 30 per cent. of the material excavated, as compared with 15 per cent. during the preceding year, came from outside the slope lines. During the months July-Sept., the total excavation from this division was 4,185,856 cub. yd.

Pacific Division.—The excavation of Pedro Miguel lock chamber was completed during the fiscal year, and the placing of concrete to the amount of 498,187 cub. yd. brought the masonry work to 79.42 per cent. of completion. No filling was added to the dam. During the three months ending Sept. 30, 56,021 cub. yd. of concrete was added to the locks.

At Miraflores, the excavation of the upper lock was completed, and construction was begun with plant transferred from Pedro Miguel. The concrete placed amounted to 272,933 cub. yd., 19.27 per cent. of the estimated total. By Oct. 1, however, the concrete in place had been increased to 421,064 cub. yd. In the lower lock, excavation was begun in Sept., 1910, and continued throughout the year. Large additions were made to the Miraflores dam, which was 83 per cent. completed on June 30. Excavation from the canal prism in the Pacific division during the fiscal year amounted to 5,945,199 cub. yd. Between July 1 and Sept. 30, the total excavation in this division was 2,126,870 cub. yd.

Locks.—During the fiscal year, the erection of the lock gates was begun at Gatun, and the fabrication of the material for the Pedro Miguel gates was well advanced on June 30. A tentative design was adopted for the machinery to operate the lock fender chains, which are intended to prevent damage to the gates by ships not under proper control. The chains are arranged to pay out against resistances provided by hydraulic cylinders; these resistances and the chains are designed to absorb the energy of a 10,000-ton ship moving at the rate of about 4 miles per hour.

Labor.—The average number of employees of the Isthmian Canal Commission and the Panama Railroad ranged between 37,271 in Jan., 1911, and 32,690 in June, 1911. Of the gold employees, over 60 per cent. withdrew from the service of the Commission during the fiscal year. No contract laborers were brought to the Isthmus, and immigration to the Canal Zone showed a remarkable decline. The excess of arrivals over departures fell from 21,114, in 1909-10, to 4,910, in 1910-11.

Terminals.—A board appointed April 24, 1911, has considered the facilities necessary for the use of the completed canal, and has outlined a comprehensive scheme of terminal development. A coaling station is projected for each end of the canal. At the Pacific terminal are to be located a dry dock, the permanent shops, and a general storehouse. The dry dock, and the docks also, are to be designed to accommodate any shipping which can use the canal; the docks will be 1,000 ft. long. Some work has already begun on the terminal dock systems, which are planned to permit subsequent extension.

Fortification.—On Jan. 12, President Taft, in a special message to Congress, asked for $5,000,000 to begin the work of fortifying the canal. The Sundry Civil Appropriations bill, passed March 3, provided $3,000,000 for this purpose. Considerable progress has already been made,

and names have been assigned by Secretary of War Stimson to the forts under construction for the principal seacoast defenses. The fort at the Pacific terminal will be named Fort Grant; those near the Atlantic terminal, Fort Sherman, Fort Randolph, and Fort De Lesseps, the latter being the first American fort to be named after a foreigner.

Lighting.—Plans for lighting the completed canal have been adopted. Range lights are to be used for establishing direction on the longer tangents, while each margin of the channel is to be marked by side lights spaced about a mile apart. The sailing lines marked by the range lights will be so placed that each ship will follow a course 125 ft. to its starboard of the axis of the canal; thus two passing ships, if on their ranges, will have their center lines 250 ft. apart.

DOCKS, WHARVES, AND WATERFRONTS

CALVIN TOMKINS

Administration. — A comparative examination of the administration and organization of the great seaports of the world discloses certain general principles which have been more or less universally applied. Unity of administration under the city, the state or the nation has been found necessary to secure efficient and economic service. Unrelated private and corporate organization, with its inevitable uneconomic rivalries, is giving way to public control. The most successful seaports are now directly managed as well as controlled by public authority.

A port must be developed as a unit under public dictation of the terms on which private carriers, shippers and consignees shall be served. The port being once conceived as an organic whole, publicly administered for the benefit of all, the chaos of jarring private rivalries and mutual obstruction, which has characterized waterfront administration in so many cities, will be terminated.

Each part of the port should be planned for the uses to which it is naturally best adapted and the several districts connected by a marginal railroad, which shall bring the cars of all of the roads to every part of the port.

Most seaports combine commercial and industrial activities, but, generally speaking, the industrial features are not pronounced. At Manchester, however, they dominate, and are of equal importance with commerce. At London and at New York, which is the largest seaport of the world, manufacturing interests are also of great importance. Manufactures benefit a city more than the commerce which passes through it in transit. Factories mean population and invested capital; involving an increase in land values and opportunities for civic organization not attainable through commercial development.

It has generally been found desirable to municipalize that part of the waterfront which is used for commercial purposes, in order that the maximum use may be obtained from it at a minimum of expense. The enterprising ports of the world have excluded private profit from participation in handling commodities at the railroad and waterfront terminals. The sharp competition which exists between the great ports is forcing public ownership and administration of the waterfront. This process is a somewhat drastic one for private owners who are confronted with public competition of a most serious character. It is not necessary, or in many cases desirable, that waterfront lands used for industrial purposes should be municipalized until such time as the demands of commerce make this necessary.

The general practice has been to make terminal improvements pay their own way, or at least meet interest, if not amortization charges on the bonds which have been issued for their creation. But in many instances, seaport communities have undertaken great waterfront improvements without insistence upon even

interest returns on the expenditure, believing that indirectly the general advantages of cheap terminal facilities stimulate growth and compensate for the burden of providing them. A recent constitutional amendment adopted by the state of New York exempts self-sustaining dock bonds from the debt limit of New York City; consequently a fund is progressively released for continuation of waterfront improvements as rapidly as these improvements become self-sustaining. This policy also imposes a salutary check upon too rapid expenditure for improvements in advance of needs.

Many ports plan their improvements and acquire the lands needed for them years ahead of actual construction. This is economical; and by establishing a comprehensive growing plan for the community, it enables private enterprise to work in line with public policy so that expensive reorganizations do not add to the complexities and difficulties of progress. American cities, as contrasted with German cities, until recently lacked foresight in this regard.

One effect of proper terminal organization is to segregate factories as well as warehouses at railroad and steamship terminals, where the best opportunities are found for the reception of raw materials and the shipment of finished products. No modern factory handling bulky or heavy commodities can advantageously compete with its rivals unless it is provided with a railroad switch which affords communication, without expensive transfers, to all railroad and steamship lines. Drayage charges must be eliminated. Many factories in Manhattan pay more for drayage between the railroad terminals and their warehouses than they pay in railroad freights, except to very distant cities.

The Bush Terminal.—There are few well organized modern terminals in North America. Montreal, San Francisco and New Orleans are exceptions to this rule; and the Bush Terminal Co. at South Brooklyn presents a model installation which can be copied to advantage by the other districts in the port of New York and by other American cities—the fundamental idea being that back of the steamship docks should be located the warehouses and factory sites, all connected with each other and the docks by a terminal railway system affording access to all the roads. Floor space, power, heat and light are rented in the industrial buildings of the Bush Terminal and shipments are made or received at the elevator doors on each floor, where the railroad or steamship freight rate takes effect.

Mechanical freight-handling devices are beginning to be employed more extensively than heretofore. Especially is this true at German, Dutch and Flemish ports and also at Manchester and Montreal. The utilization of mechanical conveyance has, however, only begun, and probably the greatest advances in freight handling in the next few years will occur in connection with the more general utilization of such facilities.

Joint Terminals.—Generally speaking, railroad corporations prefer individual terminals and object to the joint use of tracks or terminal buildings, the claim being that communal use tends to deter enterprise; and this claim is to some extent true. But joint use also tends to the elimination of unnecessary and uneconomic competition. The fundamental objection of the railroads to joint use, however, is the well founded apprehension of the increased public control to which they will necessarily be subjected.

Publicity.—It is important that terminal costs should be differentiated from the general freight rate, and that full publicity should be given to all matters appertaining to terminal administration, whether the terminals are administered by private companies or by the railroads. Such information should be exacted from private terminal companies, which act as agents for the railroads, as well as from the roads themselves.

Canals.—Ports which are favored with canal in addition to railroad and river terminals have a decided advantage. For example, the canal system connecting the East German rivers with Hamburg, and the Rhine and French canals with Antwerp, af-

forded the basis for the magnificent recent development of those two great seaports. New York, situated at the entrance to Long Island Sound and at the mouth of the Hudson River, which is the continuation of the Erie Canal, is similarly fortunate. Inland water transportation prevents excessive rail rates and relieves the roads of cumbersome, unremunerative coarse freights.

New York stands unique among the seaports of the world in that it occupies toward North America and the rest of the world pretty much the same position that in past times Venice, Amsterdam and London successively maintained as *entrepôts* for the world's commerce. With the exception of New York, all the other seaports of the world are now primarily points of exchange for products between the outside world and a limited national or international territory back of them. The wonderful facilities afforded by New York harbor, together with the cheapness of the route by way of the Hudson River and Great Lakes to the interior of the continent, gives it continental advantages not enjoyed by any other port; it is in fact *the* port of North America, and its influence upon interior railroad rates determines whether commerce shall flow from the Mississippi Valley to other Eastern seaport cities, or north to Montreal or south to New Orleans. The Panama Canal route, by diminishing the distance to the west coast of North and South America and to the Orient, will still further add to the importance of New York as a world port.

Port organization at New York is, however, a very difficult problem, owing to local geographical conditions and the fact that the port is situated in two states. Its four great divisions, New Jersey, Long Island, Manhattan and the Bronx, and Staten Island, are divided by great tidal estuaries, the separating influence of which will not be overcome until freight tunnels shall be constructed under the harbor tying the several parts together. In the interim, the port of New York suffers from an embarrassment of natural opportunities which are too magnificent to be immediately harnessed to the commercial and industrial needs of the community.

The city of New York is endeavoring to establish a comprehensive development plan and policy which shall, through succeeding administrations, provide continuity of design; and the legislature of the state has recently given the city full power to organize and administer its waterfront properties in conformity with the experience of the most successful seaports of the world. Under a recently adopted constitutional amendment, approximately $70,000,000, constituting the capitalized annual net earnings of the Dock Department, are now available for waterfront improvements, and this sum is being increased every year as the terminals become remunerative.

XX. PUBLIC SERVICES

Richard C. Harrison

CORPORATIONS AND FRANCHISES

Tendency Towards Consolidation.—Despite the existing unfavorable public opinion of corporations, trusts and combinations in general, it is pretty well recognized that in the public-utility field the extreme of combination, the monopoly, is from all standpoints, the best form of service. A well regulated monopoly is equipped to furnish a continuity of service, at a price and in a manner impossible under competitive methods. A dual telephone system, a duplication of lighting mains or wires, a multiplication of competing public services of any kind, means poor service and untold annoyance to the consuming public. This is particularly true in the transit field, and the tendency in recent years in each of the larger cities has been toward a combination of all lines. The Metropolitan Street Railway Co. of New York City, the Brooklyn Rapid Transit Co. and the Boston Elevated Railroad Co. are excellent examples of the tendency, though not perhaps of the best methods of consolidation from the side of public interests. Each year has witnessed a steady increase in the gradual passing of our public utilities into the hands of a few groups of capitalists. In July, 1911, the elevated railways in Chicago merged into a $20,000,000 combination, forming one of the largest local traction companies in the world.

New York City Electricity Supply.—In New York City, a new electric company entered the field to compete with the existing monopoly of the New York Edison Co. in the Borough of Manhattan. On May 31, 1887, the Board of Aldermen of New York City granted a franchise to the American Electric Manufacturing Co. It was unlimited as to time and covered the Borough of Manhattan and at least a part of the Borough of the Bronx. The franchise passed on March 21, 1906, to the Long Acre Electric Light and Power Co. In 1908 the company applied to the Public Service Commission for authority to issue $10,000,000 in stock and $50,000,000 in bonds. The application was denied, it being the opinion of the commission that competition in the electrical business in Manhattan would not best serve the public interests. The company appealed from the decision to the courts, with the result that it was set aside. The commission, upon a rehearing in 1911, granted authority to the company to issue $2,000,000 in stock and $4,000,000 in bonds. The company announces that it will enter into active competition with the New York Edison Co. The case illustrates perfectly the danger of the perpetual franchise. Twenty-four years unused, and still it has been held perfectly valid. New York City may, as a result, have many of its streets torn up to install the new system.

Indeterminate Franchises.—The biggest franchise fight of the year was that between the Interborough Rapid Transit Co. and the Brooklyn Rapid Transit Co. for control of the new subway system of New York City. (This subject is treated at length in the section on "Municipal Ownership" *infra*). The result is particularly interesting, on the franchise side, as the first experiment in New York with the indeterminate franchise, or grant during good behavior. The new grants are made in the indeterminate

form, with option to the city, at any time after ten years, to purchase the plant or to turn the system over to another operating company. The indeterminate franchise is the latest advance step in safeguarding the cities' interests in franchise matters. It has worked well in Massachusetts and all indications point to its success in other parts of the country.

The year was one of comparative quiet in franchise matters. Cleveland, Chicago, Detroit, Minneapolis, Toledo and Kansas City have all had hard franchise fights in recent years, but they have all been settled, except in Toledo, where the rate of fare question is still being fought out with the street-railway company. Chicago has begun to reap a golden harvest from its street-railway settlement of 1907. The profits to the city for the fiscal year of 1911 were $829,914, an increase of $355,000 over the preceding year. The city has received a total of $2,503,026 since 1907.

Science of Franchise Granting.—It is a matter of no little wonder that a subject which so vitally touches the community interest as municipal franchises should have received so slight attention on its theoretical side. Until 1911 no book was available treating the subject except on its strictly legal side. No careful study has yet been made outside of New York City to evolve a standard form as a rational basis for negotiation with companies seeking franchises. In Nov., 1910, the National Municipal League devoted a portion of its annual meeting to the franchise question, and its proceedings contain instructive articles on the "constructive franchise policy," and interesting accounts of a few of the more important municipal franchise fights and settlements. The franchise committee of the League is at work on a standard form of franchise which it is hoped will equal in value and importance its recent "municipal program."

The socialist government of the city of Milwaukee prepared, during 1911, a proposed standard form of franchise but the terms are so severe that the companies are unanimous in refusing to apply for public service franchises under it.

In 1911 the New York Public Service Commission published an interesting volume containing a complete account of the various franchises of electrical corporations in Greater New York.

PUBLIC SERVICE COMMISSIONS

STATE COMMISSIONS

That the commission scheme of regulation of public utilities has come to stay, and that it has elements of vigorous growth, was amply demonstrated during 1911. After a somewhat stormy period of trial the state commissions generally appear to be settling down to less spectacular, but infinitely more valuable, careers of public usefulness. In no state has legislation been passed in 1911 lessening the powers of existing commissions, though the courts have accomplished practically the same result in many cases through "interpretation" of existing statutes. New Jersey has greatly strengthened its former weak law, and a few states have established new commissions.

District of Columbia.—Ever since 1908, when the street railways of the District of Columbia were placed under the control of the Interstate Commerce Commission, that body has chafed under a burden so little correlated to its general duties. In 1910, a bill was introduced into Congress to transfer the power to the Commissioners of the District of Columbia, and to give them the general powers of a public service commission. The bill failed of passage. Again, in 1911, we find in the President's message a recommendation to the effect that the District Commissioners be given powers "similar to those of the Public Utilities Commission of New York City or similar boards in Massachusetts." "There are a sufficient number of corporations enjoying the use of public utilities in the District of Columbia," said the President, "to justify and require the enactment of a law providing for their supervision and regulation in the public interest,

consistent with the vested rights secured to them in their charters. A part of these corporations—to wit, the street railways—have been put under the control of the Interstate Commerce Commission, but that Commission recommends that the power be taken from it, and intimates broadly that its other and more important duties make it impossible for it to give the requisite supervision." No law carrying the recommendation into effect was passed however.

New York.—With the success of the Democratic party in New York in Nov., 1910, the future of the Public Service Commission for a time looked rather doubtful. Public unrest in New York City over the failure of the local commission to reach a satisfactory solution of the question of new rapid-transit facilities, had been growing daily during 1910, and it was widely predicted in the press that one of the first acts of the new Democratic legislature would be a thorough reorganization of the public service commissions, with the possible abolition of the local New York City commission and the re-establishment of the former Board of Rapid Transit Railroad Commissioners to consider rapid transit exclusively. Gov. Dix, in his first message to the legislature, contented himself with the statement that he would make a study of the public service commissions and submit a special message on the subject at a later date. On the first day of the session, bills were introduced to abolish the Public Service Commission for the First District. The legislature, however, was more interested in electing a United States senator than in changing the public service commissions law. The fight which ensued crowded everything else from consideration. Gov. Dix changed his mind about a special message, but instead appointed his business partner, W. A. Huppuch, Public Service Commissioner for the Second District, to succeed John N. Carlisle; and very soon thereafter he designated Mr. Carlisle as special commissioner to investigate the Public Service Commission for the First District and report suggested changes. Meanwhile, the governor failed to appoint a successor to Commissioner Edward M. Bassett of the First District, whose term expired Feb. 1, 1911. This fact, coupled with the appointment of an investigating commissioner, who had been a member of the Second District commission revived the rumor that it was the Democratic program to consolidate the two commissions and establish a local rapid transit board for New York City. Mr. Carlisle made a thorough investigation. He held a public hearing for protests but no complainants appeared. His report made no criticisms of the work of the commission and recommended that no changes be made. He specifically advised against consolidation of the two commissions. Gov. Dix thereupon treated the matter as closed, and appointed J. Sergeant Cram in place of Commissioner Bassett. The appointment was widely criticised as ill advised, owing to the close affiliation of Mr. Cram with the New York City Democratic machine. Several bills to abolish or modify the commissions died in committees of the legislature.

A large part of the time and energy of the Public Service Commission for the First District during 1911 was taken up with the consideration of rapid-transit matters. Early in the year, the commission invited joint consideration of the problem by the Board of Estimate and Apportionment. A committee comprising the Presidents of the Boroughs of Manhattan, the Bronx and Richmond worked with the commission all the winter and spring. A comprehensive report was made on June 5, 1911, which contains a thorough review of the transit situation, with recommendations which were adopted substantially in their original form by the Board of Estimate and Apportionment. The plan commits the City of New York to the construction of subways and elevated railroads which, when completed, will cost the city and the operating company over $200,000,000. (See also "Municipal Ownership," *infra.*)

New Jersey.—As noted in THE AMERICAN YEAR BOOK for 1910, New Jersey adopted a very weak public service commissions law in 1910. Gov. Wilson strongly urged upon the

legislature of 1911 the necessity for a radical revision of the statute. The result was Chapter 195 of the Laws of 1911 (in effect May 1) which has placed New Jersey among the states having the very strongest public-utility statutes. The new law provides for the appointment of three commissioners with terms of six years and salaries of $7,500. The commission is given power to fix rates, enforce regulation designed to secure safe and adequate service, and supervise generally the workings of all classes of public-utility companies. It may establish standards of service and a uniform system of accounting. A novel and interesting power is the right to fix the "rate of depreciation" for various classes of utilities. "Each public-utility corporation shall conform its depreciation accounts to the rates so ascertained, determined and fixed, and shall set aside the moneys so provided for out of earnings, and carry the same in a depreciation fund." Payments from this fund may be made only for actual replacements or new construction work. The commission may appraise and value public utilities, investigate complaints, test meters, and control stock and bond issues. The present commission is allowed an annual appropriation of $100,000, which is twice the amount granted its predecessor. A notable appointment to the new commission was that of Prof. Winthrop M. Daniels, head of the Department of History, Politics and Economics of Princeton University. With able administration the new law should be productive of excellent results.

Connecticut.—By Chapter 128 of the Laws of 1911, Connecticut created a public utilities commission composed of "three electors of this state appointed by the General Assembly upon the nomination of the Governor." The first commissioners are to hold office till July 1, 1913, 1915, and 1917, respectively, with successors appointed for six-year terms. Commissioners are to receive $5,000 a year. Railroads, common carriers, gas and electric companies, telephone, telegraph and water companies, are included under the jurisdiction of the commission. Power is given it to fix rates and make such orders as are necessary to secure safe and adequate service. Companies are required to report accidents under penalty of $500 fine for default, and it is made the duty of the commission to examine into their causes and "suggest means if possible whereby similar accidents may be avoided in the future." Unlike the law in New York State, these accident records are to be open to public inspection. Annual reports are required from the various companies, but no power is given the commission to establish a uniform system of accounts. The commission succeeds to the powers and duties of the former inspector-general of gas meters and illuminating gas. It is charged with the duty of testing both gas and electric meters, and may fix standards of illumination. Orders of the commission are reviewable by appeal to the Superior Court. The law is decidedly weak on the side of financial and franchise control. No power is given the commission to pass upon proposed stock and bond issues or the propriety of dividends. Franchises may be exercised and transferred without consulting the commission. The result of the law may be an improvement in operating conditions among Connecticut public-utility companies. It can hardly be expected that more will be accomplished by the commission. The law is a queer mixture of strength and weakness. It contains a radical provision for the recall of inefficient commissioners.

New Hampshire.—On April 15, 1911, New Hampshire adopted its first public service commissions law, effective May 15. Railroads, telephone and telegraph, light, heat, power, water, ferry and toll companies are included under the jurisdiction of the new commission. Provision is made for three commissioners appointed by the Governor, with terms expiring on the first Monday in June in 1913, 1915, and 1917, respectively, their successors to hold office for six-year terms. The chairman is to receive a salary of $3,500, the clerk, $3,200, and the third commissioner, $3,000. The commission has the power to fix rates, control stock and bond issues, and establish

a uniform system of accounts. Franchises and all transfers of the rights granted by them must be submitted to the commission for approval. The law contains the usual general provisions in the matter of investigating accidents and securing safe and adequate service. The commission may spend, for the employment of experts and office force, a total of $4,000, without the "further approval of the Governor and Council." It is difficult to see how effective work can possibly be accomplished with so small an appropriation. Edward C. Niles, John E. Benton and Prof. Thomas W. D. Worthen are the new commissioners. The first two are lawyers. Prof. Worthen was head of the Department of Mathematics of Dartmouth College.

Ohio.—On May 31, 1911, Ohio joined the ranks of the public service commission states by the passage of a law changing the name of its railroad commission to Public Utilities Commission and extending its jurisdiction to include common carriers, telegraph, telephone, electric light, heat and power, gas, pipe-line, water, central-heating and refrigerating, district-messenger and electric-signalling companies. The salaries of the commissioners are increased from $5,000 to $6,000. The commission has rate-making power and control over stock and bond issues. It can compel the filing of documents relating to construction, maintenance or use of plants or property, or to any service, rate or charge. It may appraise the property of the companies under its jurisdiction and fix standards of service. Provision is made for the establishment of uniform systems of accounts. The law became effective June 30, 1911, and $75,000 was appropriated for its enforcement. It is a strong statute, but the appropriation seems to be inadequate. It was expected that an additional $75,000 would be available from a former appropriation to the railroad commission. The Attorney-General has ruled against this, and the new commission appears to be greatly handicapped as a result. Gen. O. H. Hughes, O. P. Gothlin and J. C. Sullivan form the commission.

Kansas.—Kansas became a public service commission state on March 14, 1911 (L. 1911, Chap. 238), by the extension of the powers of its Board of Railroad Commissioners to include control over telephone (except mutual companies), telegraph, oil and gas (except pipe lines less than 15 miles in length not operated for general commercial supply), dining-car, heat, light, water and power companies, and common carriers, including in the term railroad and street-railway, both local and interurban, express, sleeping-car, freight-line, equipment and pipe-line companies. The commission has general supervision over service, may fix rates and establish standard commercial units for service, and standard meters for testing commercial meters. Control over stock and bond issues, franchises and dividends is vested in the commission. Penalties of from $100 to $1,000 for disobedience to orders are provided. The commission may enforce its orders by mandamus, injunction or appropriate criminal proceedings. It is specifically provided that the act is to be liberally construed. The law is strong and closely modeled on those of New York and Wisconsin.

Nevada.—By Chapter 162 of the Laws of 1911, approved March 23, Nevada created a public service commission providing that "the Railroad Commission of Nevada shall be *ex officio* the Public Service Commission hereby created." Although the same officials act in the dual capacity of railroad commissioners and public service commissioners, their powers and duties under the new law are kept distinct from those exercised by them in the regulation of railroads. "The business of the Public Service Commission shall be kept entirely separate from that of the Railroad Commission." This provision constitutes a novel feature not found elsewhere. As a public service commission, the board is to have jurisdiction over the business of supplying heat, light, power, water and sewerage service. The commission may fix rates, subject to appeal to the district court, and adopt standards of service, but no power is given it to exercise financial control through approval either of stock and

bond issues or of dividends. It may prescribe forms for reports to itself, but has no power to adopt a uniform system of accounting for companies under its jurisdiction. The commission may, however, examine the books of the companies. An appropriation of $5,000 is made to carry the law into effect, with an additional allowance of $3,600 for the employment of an expert engineer. The law is decidedly weak and it would seem that little could be accomplished under it.

Washington.—On March 18, 1911, the State of Washington passed an act changing its Board of Railroad Commissioners into a Public Service Commission with broad powers over all classes of public utilities. The commission is to consist of three members, appointed originally for two, four and six years, respectively, with subsequent terms of six years. Salaries of commissioners are fixed at $5,000, with a secretary at $2,000, a rate clerk and statistician at $3,000, an engineer at $3,000, and an inspector of safety appliances at $3,000. The commission may fix rates and has broad powers of financial and operating supervision. An annual report is required from all operators of public utilities, which is to include a statement of the amount of issued capital stock, dividends paid, surplus (if any), debts, both funded and floating, number of stockholders, cost and value of the company's property, details of franchises and equipment and certain other details of minor importance. One thousand dollars per day penalty is fixed for disobedience to orders of the commission. $118,146.68 is appropriated to carry the act into effect.

California.—At the election of Oct. 10, an amendment to the state constitution was adopted permitting the legislature to create a public service commission.

Illinois.—The legislature of 1911 considered the subject of public-utility regulation, but did not pass a law creating a commission. It did, however, appoint a legislative committee of nine, with instructions to make a thorough investigation of the practical workings of existing laws in other states. The committee was given 18 months within which to report, and an appropriation of $12,000.

Pennsylvania.—A comprehensive public-utilities bill creating a board of five members to regulate 23 classes of public utilities was introduced into the legislature and received considerable attention. It failed of passage, however.

CITY COMMISSIONS

During the year serious trouble developed in connection with two of the existing city commissions, those of Los Angeles, Cal., and St. Joseph, Mo. Both difficulties were caused by attempts to solve rate problems, emphasizing the great possibility for friction and dissatisfaction which always attends attempts to establish rates by government action.

Los Angeles.—For three years there has been a strong popular fight for a reduction of telephone rates in Los Angeles. In 1911 the Public Service Commission employed W. F. Sloan, telephone expert of the Wisconsin Railroad Commission, to prepare a schedule of rates for submission by the Commission to the City Council. He reported on May 26 a schedule which equalized certain rates, but without any material general reduction. The City Council refused to accept the recommendation and adopted a greatly reduced schedule. The Public Service Commission thereupon resigned in a body. On July 28 the Council, as the result of litigation instituted by the telephone company, receded from its position and adopted a new set of rates substantially the same as those in effect before the advance.

St. Joseph, Mo.—In St. Joseph, Mo., the Chairman of the Commission and the other members had a serious difference of opinion in the matter of the valuation of a utility plant, resulting in considerable bad blood and unpleasant recriminations on both sides.

Two new city commissions have been established.

Wilmington, Del.—Wilmington is unique in the possession of a state-

created public service commission, while the rest of the state is left unregulated. The new law, passed March 25, 1911, provides for the appointment by the Mayor, subject to confirmation by the City Council, of five citizens and residents of Wilmington, one from each of the representative districts, to form a Board of Public Utilities Commissioners. The commissioners first appointed are to serve from one to five years, with five-year terms for their successors. Commissioners are to receive $5.00 per day while attending sessions of the Commission. Jurisdiction is given over all public utilities, including in the term street railways, express, traction, gas, electric light, heat and power, water, telephone and telegraph companies. The duty of the commission is to see that they comply with the law, furnish safe and adequate service, keep their books, records and documents "so as to afford an intelligent understanding" of their business, order discontinuance of unjust discriminations, investigate accidents, regulate rates and pass upon franchises. The law became effective Aug. 1.

Houston, Tex.—By ordinance, approved May 15, 1911, the city of Houston provided for a public service commissioner, to be appointed by the mayor, subject to approval by the Council, and removable by either. The salary of the new commissioner is to be fixed by the mayor and is payable out of the annual franchise charges collected from public-service companies. The commissioner is to have general supervisory power over all public-service companies operating under municipal authority. He is charged with the preservation of copies of all franchise documents as public records, together with copies of rules and regulations of companies doing business in the city. He is to see that franchise taxes are paid, investigate complaints as to service and report his findings to the mayor. He is to test gas from time to time and see that it is up to standard, and test meters, both gas and electric, upon application of consumers. The position is rather that of general supervisor than that of regulator.

PRACTICAL WORKING OF THE LAWS

The vindication of the New York City commission in the report of Commissioner Carlisle did much to strengthen the public service commission movement throughout the country. New York, on account of its commercial supremacy and its pioneer work in this form of government regulation, has naturally been closely watched by other states seeking a solution of their utility-corporation problems. The uncertainty as to the fate of the statute in New York had a great restraining effect upon other legislatures inclined to look favorably upon regulative legislation. With the apparent solidification of the foundations of the New York commission, there has been a rapid advance throughout the entire country toward drastic public-service laws. The most important development in the practical workings of the laws during 1911 has been the increasing tendency of the courts to limit the powers of the commissions in matters of a strictly corporate nature. The courts have said again and again that "the public service commission does not take the place of the board of directors." The function of the commission is to regulate for the benefit of the public, not to manage the business of the companies generally.

Attitude of the Companies.—"Public control or regulation of public-service corporations by permanent commissions has come to stay. Public-utility corporations have too frequently assumed that new laws and regulations were disastrous and ruinous without first giving them a fair trial. . . . Control or regulation exercised through such a body has many advantages over that exercised through regular legislative bodies or committees. . . . When, through a wise and judicious state control and regulation, all the advantages, without any of the disadvantages, of state ownership are secured, state ownership is doomed." This quotation, taken from the annual report of the American Telephone and Telegraph Co., the great Bell telephone trust, for the year ended Dec. 31,

1910, is a correct reflection of the position of the larger public-service corporations toward public-service regulation at the close of the year 1911. They began with dreading "control," tried to secure the repeal of the regulative statutes, found that the plan had deep roots and had come to stay. With this knowledge came a gradually growing appreciation of the benefits to themselves of the new order. Commissions acted judicially. They were less arbitrary. Their decisions were reviewable in the courts, and, above all, they served to stave off the great bogie of all public-service companies—municipal and state ownership. The companies and the commissions seem to be getting together.

Status of Public Service Commission Legislation.—For reference, the following is the list of states and cities with public service commissions at the close of 1911. The rest of the states have practically no effective state control by commission.

Public Service Commission States.

New York, Connecticut,
Wisconsin, Ohio,
Michigan, Washington,
Maryland, Nevada,
New Jersey, New Hampshire,
Vermont, Kansas.
Massachusetts (not in name but the Railroad Board and the Gas and Electric Light Commission have many of the broad powers of public service commissions).

Partial Control of Public Utilities.

Maine, Mississippi,
Pennsylvania, Louisiana,
Virginia, Missouri,
North Carolina, Iowa,
South Carolina, Minnesota,
Tennessee, Nebraska,
Illinois, Oklahoma.
California,

City Commissions.

New York, St. Louis,
Los Angeles, Kansas City,
St. Joseph, Wilmington,
Seattle (single commissioner),
Houston (single commissioner).

MUNICIPAL OWNERSHIP

Each year sees an advance in the number of public services generally recognized as proper subjects for municipal ownership. With the principle well established that certain activities touch the interests of the community so closely that it is unsafe to leave them in the hands of individuals, certain public services, such as water supply and sewerage, are rapidly passing almost exclusively into municipal ownership. Others are still on the border line—services of such great importance that it is impossible to leave them entirely to the management of private agencies but not yet universally considered proper subjects for municipal ownership. To meet this case there has been a generally widening acceptance of the public service commission plan of utility regulation. At the same time, the tendency is undeniably toward a wider field of municipal ownership.

TRANSIT FACILITIES

Particularly is this true of rapid-transit facilities. The unprecedented growth of American cities has made them veritable gold mines for promoters of traction companies. Private ownership became firmly intrenched through a long period during which there was scant recognition of the social importance of rapid transit. The natural tendency of private capital to consider profit rather than community interests has had its inevitable result in most of our large cities. Transit has been generally planned to foster congestion and without any reference to a logically developed city plan. With the advent of the subway as a rapid-transit necessity, a new element, that of enormous cost for construction, tended to drive that particular class of transit to municipal ownership.

New York.—In 1904, the city of New York completed the first great municipally owned passenger subway at a cost of over $1,250,000 per mile of single track. The subway was leased for 50 years, with the option to the company to continue for a further period of 25 years. No reservation was made by the city of

the right to retake the line in the event of unsatisfactory service by the operator, nor was any provision made whereby the city might compel adequate service. Thus, though owned by the city, the citizens secured practically none of the supposed benefits of municipal ownership. From the date of the opening of the subway, the city has sought to secure from the company reasonable and necessary extensions to the original subway. Both the Board of Rapid Transit Railroad Commissioners and its successor, the Public Service Commission, negotiated with the Interborough Rapid Transit Co. for years, without result other than an increasing exasperation and unrest on the part of the travelling public. Finally, the Public Service Commission abandoned negotiations, and prepared plans for a gigantic competing municipal subway and elevated railroad, to be known as the Tri-Borough System, extending from the northern extremity of the Bronx, running through Manhattan, under the East river, and thence through Brooklyn to Coney Island, with a length of 43.16 miles, and an estimated total cost for construction alone of over $150,000,000. These elaborate plans were duly advertised for bids in two forms—construction and operation, and construction alone. No bids were received for construction and operation with private capital. A number of bids were received for construction with city funds. Before the award of contracts, the Interborough Rapid Transit Co. submitted an elaborate offer as an alternative. This included the third tracking of its elevated lines, and the constructions of what it called the logical development of its existing subway lines. The Public Service Commission held up the Tri-Borough bids and transmitted the Interborough offer to the Board of Estimate and Apportionment, with the request that that body, as the one in control of the finances of the city, should indicate whether it considered it wise to accept the company's offer or whether the Commission should award the Tri-Borough bids. The result was the appointment of a committee consisting of the Presidents of the Boroughs of Manhattan, the Bronx and Richmond, who conferred with the Public Service Commission during the entire winter and spring of 1911. During their conferences, the matter was further complicated by an offer from the Brooklyn Rapid Transit Co., the corporation controlling the rapid-transit facilities of the Borough of Brooklyn. The fight was closely drawn between municipal ownership with effective control and a continuation of the Interborough Rapid Transit monopoly. On January 5, 1911, John Purroy Mitchel, President of the Board of Aldermen, and William A. Prendergast, the Comptroller, had declared, in a majority report of the Transit Committee of the Board of Estimate and Apportionment, strongly in favor of municipal ownership as correct in theory and as a fulfillment of preelection pledges by the entire Board of Estimate and Apportionment. Mayor Gaynor, the minority member, however, became the advocate of the completion of the present subway. The joint committee of the Public Service Commission and the Board of Estimate and Apportionment reported on June 5, 1911, a comprehensive plan for a division of territory between the Interborough Rapid Transit Co. and the Brooklyn Rapid Transit Co., with provisions which insured the effective control of the proposed systems under ten-year indeterminate franchises, and their eventual reversion to the city. The plan was rejected by the Interborough Rapid Transit Co., but accepted by the Brooklyn Rapid Transit Co. The net result will be the construction by the city of a comprehensive subway system, roughly on the lines of the Tri-Borough system, with branches in the Borough of Queens, at a cost of over $133,000,000 and the expenditure of over $60,000,000 by the Brooklyn Rapid Transit Co. in elevated extensions and in equipment. The city will own the subway from the day it is built, making it the most costly municipal traction experiment in the world.

Chicago.—The city of Chicago is actively engaged in working out the solution of its transportation problems through the application of mu-

nicipal ownership. It has an expert commission at work on the preparation of plans for a comprehensive subway system, which it is announced will be constructed entirely with city funds. It will rival New York's subway system in size and enormous cost. The Transit Committee of the City Council after a stormy debate declared emphatically that no private capital was desired in this new municipal experiment.

Seattle.—The city of Seattle has not yet reached the point where subways are necessary. The city has, however, begun the construction of a municipal street railway, 13 miles in length, from Ballard to Ranier Valley, to compete with the privately owned lines. An interesting feature of the new line will be the use of over three miles of track in the heart of the city, owned by the private competing line. This was made possible by reservations contained in the franchise granted some years ago to the railroad company. The new line will cost $800,000 and will be operated, as well as owned, by the municipality. It is one of the first large experiments in the United States with a municipal street railway.

San Francisco.—San Francisco is progressing rapidly with its new municipal street railway. It, too, will compete directly with the private railroad company.

Winnipeg, Can.—On July 20, 1911, Mayor Evans announced that the city had decided to purchase the entire plant of the Winnipeg Electric Railway Co. for $15,000,000. The sale included 14 years of unexpired franchise, a power plant located 60 miles east of the city, and, in addition to the street-railway property, covers both gas and electric-light plants. This purchase places the city of Winnipeg first among American cities in the matter of municipal ownership of public utilities.

MUNICIPAL ELECTRIC PLANTS

Pasadena, Cal.—A large municipal electric plant for both public and private lighting was completed in 1911 at a cost of $165,000. Its capacity is 1,900 kilowatts and city light is furnished for over 300 arc lamps, 1,050 tungsten lamps of 40 c.p., 17 of 60 c.p., 55 of 80 c.p., and 30 of 200 c.p. It is planned to enter into active competition with the private company for commercial lighting, and considerable advertising has been done urging the people to "Use City Light."

Orange, N. J.—A new municipal plant for street lighting was placed in operation Feb. 16, 1911.

Binghamton, N. Y.—On Oct. 28, the establishment of a municipal lighting plant was voted by a large majority of the taxpayers.

Santiago, Chili.—The elaborate municipal electric light and telephone plant representing an investment of over $2,000,000 was totally destroyed by fire Jan. 7, 1911.

North Carolina.—By Laws of 1911, Chap. 86, the state has granted general authority to municipalities to maintain water, sewerage, gas and electric plants.

LIGHTING

Decorative Street Lighting.—The most important advance in the matter of public illumination in the cities of the United States during 1911 has been the rapid adoption of various forms of decorative street lighting. What is popularly known as the "Great White Way" movement has spread with surprising strength through most of the larger cities during the past few years, and particularly during 1911. The theatre section of Broadway in New York City for many years has been known as the "Great White Way" owing to its gorgeous illumination, though it should be noted that this has been the result of an overdeveloped mania for electric advertising signs, rather than of municipal efforts toward scientific or decorative illumination. As applied to cities outside of New York, however, the term is used to designate streets brilliantly lighted by the municipality. Three forms of decorative street lighting have found favor in the United States in recent years: (1) arches or festoons of

incandescent lamps over or along streets; (2) decorative lamp posts supporting clusters of tungsten lamps; (3) high power flaming arc lamps. The first class was first employed by the city of Columbus, O., some years ago, following a favorable impression gained by their use for temporary festival illumination. The plan is followed by the city of Quebec, Can., in lighting the famous Dufferin Terrace. The method has many objections, chiefly its lack of dignity and the ugly appearance of the arches in the daytime. Few cities are now adopting this type of street lighting. The second method is perhaps the most popular in the United States. The most notable tungsten-cluster installation during the year was that completed by the city of Chicago, on Michigan Boulevard between Randolph and Twelfth streets, a stretch of about 1⅛ miles. One hundred and sixty standards of six arms each have been employed. Each arm supports a 100-watt Mazda lamp with its center 15½ feet above the sidewalk. The effect is pleasing during both day and night. The usual type of arc lamp used in modern street lighting is the so-called "flaming arc," introduced into the United States from Germany, a country generally recognized as pre-eminent in scientific street illumination. The system is largely in use in Toledo, St. Louis, Baltimore, Pittsburg and Syracuse. Notable advance in decorative street lighting has been made in 1911 in the following cities: New York (125th street made a "Great White Way"), Philadelphia, Detroit, Minneapolis, Atlanta, Seattle, Omaha, Rochester, and Indianapolis.

Chicago Gas Rate Case.—The most interesting and important controversy with reference to lighting rates during 1911 was the fight in Chicago for 70-cent gas. In 1905, the General Assembly of Illinois passed an act authorizing the fixing by the City Council of "just and reasonable" maximum rates for gas and electricity. In February, 1906, Chicago fixed a rate for gas for five years at 85 cents per 1,000 cubic feet. The company accepted the rate with an express reservation of its right to contest the authority of the city to regulate rates after the expiration of the 5-year period. Mayor Dunne vetoed the ordinance giving this reservation as one ground of his objection to it. The ordinance was passed over his veto, however, and the rate has been 85 cents since that time. The city campaign in 1910 turned largely upon the gas-rate question, and Carter Harrison and a City Council were elected on a 70-cent rate platform. Rates cannot be made by platforms, however, and the City Council appointed Prof. W. J. Hagenah, an expert in the employ of the Wisconsin Railroad Commission, to examine and report upon a fair rate. After a study extending over several months he advised the adoption of a 77-cent rate. This was not what the council wanted, and Prof. Hagenah was superseded by Prof. E. W. Bemis, former Deputy Water Commissioner of New York City. He revised the Hagenah report and recommended a rate of 75 cents for the first year, 70 cents for the next three years, and 65 cents for the fifth year. The City Council, however, for some unexplained reason, disregarded both reports and, on July 17, 1911, fixed the rate arbitrarily at 75 cents for the first year, 70 cents for the next two years, and 68 cents for the fourth and fifth years. The company promptly took advantage of its reserved right to contest the rate-making power of the Council and the matter is now in litigation. On August 7, Judge Gibbons fixed the rate *pendente lite* at 80 cents. It is expected that the suit, with appeals, will last at least two years.

Manhattan Borough Electricity Rates.—On July 1, 1911, the New York Edison Co. and the United Electric Light and Power Co., which together control the entire electricity supply of the Borough of Manhattan, made a notable reduction in rates, which on the basis of past business indicates an annual saving to customers of over $1,250,000. While this reduction was made voluntarily, it is of course impossible to say how far it was prompted by fear of action by the Public Service Commission. The new schedule for general

electric supply, on the basis of monthly consumption, is as follows:

First 250 k.w.-hrs., 10 cts. per k.w.-hr.
Next 250 k.w.-hrs., 9 cts. per k.w.-hr.
Next 250 k.w.-hrs., 8 cts. per k.w.-hr.
Next 250 k.w.-hrs., 7 cts. per k.w.-hr.
Next 500 k.w.-hrs., 6 cts. per k.w.-hr.
Excess over 1,500 k.w., for the excess, 5 cents per k.w.-hr.

The present legal maximum rate in the Borough of Manhattan, New York City, is 10 cents per k.w.-hr.

Queens Borough Gas and Electricity Rates.—The largest company supplying electricity to the Borough of Queens in the city of New York is the Queens Borough Gas and Electric Co. Late in 1910, complaint was made, pursuant to the provisions of the Public Service Commissions Law, by various consumers asking the Commission to reduce the rates charged by the company for both gas and electricity. Early in the proceedings, the company informed the Commission that it was willing to accept any rate fixed by the Commission, continue it in force during 1911, and make it a success if possible. The case is novel in that it thereupon became practically an arbitration between the company and its consumers, with the Commission as the judge. The Commission on June 23, 1911, ordered that the maximum rate for gas from July 1, 1911, to January 1, 1912, should be $1.20 per 1,000 cub. ft., and from January 1, 1912, to July 1, 1912, $1.15 per 1,000; and that the rate for electricity from July 1, 1911, to July 1, 1912, should not exceed 13 cents per k.w.-hr.

WATER SUPPLY

New York City.—An abundant supply of pure water has always been a prime necessity to the successful maintenance of permanent communities. With the increasing tendency of population to congregate in cities, the problem of water supply has been for many years ever present with municipal authorities. The year 1911 has proved no exception to the rule. It has, in fact, marked a decided advance in the planning of extensive works for future supply, and the pressing toward completion of two gigantic aqueducts already in course of construction. The city of New York, with its 4,500,000 people and its rapid annual increase, has long been hard pressed to secure an adequate water supply. The dry summer of 1911 emphasized the danger of the present situation by reducing the available supply to a point where it was necessary for the public officials to enjoin the strictest economy in water consumption, to adopt an elaborate system of house to house inspection to prevent waste, and to seek new sources of emergency supply. At the same time, work has been continued rapidly upon the Catskill Aqueduct, planned to supply 500,000,000 gal. daily, with a reservoir capable of holding 120,000,000,000 gal. Work was begun during the summer of 1911 upon the deep rock tunnels under the city of New York, from the Yonkers line to the heart of Brooklyn, which are to deliver the water to the local distributing mains. These tunnels, 15 ft. in diameter, will run through solid rock at a varying depth, reaching in some places 700 ft. They will represent an investment of over $25,000,000. In addition to the great Catskill Aqueduct, the city is providing enormous new storage facilities. On May 11, 1911, the Board of Estimate and Apportionment appropriated $8,690,000 to complete the so-called Jerome Park reservoir in the Borough of the Bronx. This project was begun in 1895, but after the completion of one of its two proposed basins the plan was abandoned until the water shortage of 1911 showed clearly the necessity for its completion. In addition to providing a central storage system for the Croton water supply, the new reservoir will include an elaborate filtration plant. The entire work when completed will represent an investment of $18,000,000. The reservoir will have a capacity of 400,000,000 gal.

Los Angeles.—The year 1911 marked the completion of an important link in the great water-supply system under construction by the city

of Los Angeles. On February 27, the Elizabeth Tunnel was finally opened through the crest of the Sierra Madre, completing the second longest water tunnel in the United States. The new tube is 26,872 ft. in length, being exceeded only by the Gunnison Tunnel built by the United States Reclamation Service, which is 30,000 feet long. The Elizabeth Tunnel was begun Oct. 5, 1907, to form part of a system, 230 miles in length, which is to carry snow water from the Owens Valley to Los Angeles. Part of this remarkable water-supply project involves the crossing of the Mohave desert with an aqueduct 130 miles in length, and the construction of over 9 miles of difficult siphon work across deep valleys. When completed, it is estimated that a supply of water for domestic purposes will be secured for a city of over 1,000,000 population, with sufficient surplus to irrigate 125,000 acres of land. In addition to direct supply, it is expected that the aqueduct will generate not less than 100,000 horse power of electrical energy. An interesting feature of the tunnel work is the economical method of construction adopted. City engineers supervised the work, which was done entirely by day labor at a cost of approximately $50 per ft. for excavation and $10 per ft. additional for completion. The entire project will represent, when completed, an investment of over $25,000,000.

Other Projects.—A number of cities have materially increased their plants during the year. Jacksonville, Fla., has begun the construction of a new reservoir with a capacity of 3,375,000 gal. Ogden, Utah, is engaged in increasing its reservoir capacity from 2,000,000 gal. to over 5,000,000 gal. Brookline, Mass., completed a new reservoir of 4,000,000 gal. capacity, begun in May, 1909. Moline, Ill., early in March opened four units of 1,000,000 gal. daily capacity each—a part of its new reservoir system. The completed plant will include two additional units of similar capacity and is designed to take care of normal increases in consumption for a number of years to come. The present consumption is about 3,500,000 gal. per day. In May, 1911, the city of Niagara Falls voted to expend $360,000 for the construction of a municipal water-supply system to compete with the Western New York Water Co., a private corporation furnishing the present supply. It was decided to parallel existing private mains in default of a satisfactory arrangement whereby the city might acquire them.

PURIFICATION

The purification of the water supply is no less important than that it should be of sufficient quantity. The dangers incident to an impure supply, with the beneficial results following filtration and sterilization, have been so frequently demonstrated that it is safe to say that no progressive community willingly consumes raw water without certain knowledge that it is not contaminated. American cities during the last few years, have made frequent use of the rapid or mechanical filtration system, although it is viewed unfavorably in European cities. During 1911, considerable dissatisfaction has been expressed with this method, particularly in Pennsylvania. Sterilization by the use of hypochlorite of lime has recently been tried in several cities. Extensive tests were made in 1911 by the city of Niagara Falls, with the result that the city abandoned this method owing to complaints as to the objectionable taste imparted to the water, particularly in cold weather. (See also XXVIII, *Sanitary Chemistry;* and XXXII, *Civil Engineering.*)

LIABILITY OF MUNICIPALITY FOR IMPURE WATER SUPPLY

An interesting legal question with reference to the liability of a city for damage caused by impure water was raised in 1911 in the case of Della Keever v. The City of Mankato (129 N. W. Rep. 158). The plaintiff sued to recover for the death of her husband from typhoid fever, caused, it was alleged, by drinking impure drinking water supplied by the city mains. The Minnesota Supreme Court held the city liable, upon proof that the drinking water caused the disease. The reverse

decision was made in the state of New York in the case of Oakes Mfg. Co. v. The City of New York (125 N. Y. Sup. 1030), where it was held that the city was performing a municipal agency in supplying water and was therefore subject to the rules of law applying to municipal corporations acting in their governmental capacity.

SEWAGE DISPOSAL

The year 1911 has not marked any decided change in ideas or advance in methods along the lines of sewage disposal. Indeed the disposal of household wastes through underground pipes operated for the most part on the gravity principle appears to be so simple and generally satisfactory that it has been universally adopted in American cities. In some few communities, notably in New Orleans, topographical conditions make pumping necessary, and considerable progress has been made in recent years toward perfecting adequate pumping systems. In the majority of cities, however, the problem of sewage disposal has narrowed to the maintenance of sewer capacity equal to the increasing needs of growing communities. (See XXVIII, *Sanitary Chemistry;* and XXXII, *Civil Engineering.*)

NEW SEWERAGE SYSTEMS

Baltimore and New Orleans.—Baltimore and New Orleans were for many years unpleasantly notorious as the only American cities of any considerable size without systems of sanitary sewers. After a disastrous experience with private sewer companies, the city of New Orleans purchased the mains of the New Orleans Sewerage Co. It thereupon undertook the construction of an extensive system of drainage and sewerage, with elaborate pumping works to secure a proper flow impossible in a simple gravity system under existing topographical conditions. On May 8, 1911, the city sold $7,000,000 of public improvement bonds, the greater part of which were for the completion of the drainage system and the pumping stations.

Baltimore got along with private drains until 1906, though how it managed to do so was a source of wonder to all municipal sanitary engineers. The city finally adopted thoroughly modern plans for an extensive city system, which should incorporate as many of the private drains as were fit for service, and reconstruct the rest. The year 1911 has marked the substantial completion of the system for the eastern and northeastern wards of the city. A total of 160 miles of new work have been completed during the last four years. The legislature of 1910 authorized the city of Baltimore to borrow $10,000,000 to complete the work.

Vincennes, Ind.—This city is notable through its efforts to install a private sewer system at a time when practically all American cities of any size are committed to municipal systems. Atlantic City, N. J., and Austin, Tex., are the only towns of 20,000 population having privately managed sewers. Financial difficulties made it necessary, however, for the Indiana city to seek private aid, and a statute was passed by the legislature of 1911 (L. 1911, ch. 104), authorizing the granting of sewer franchises for a term not exceeding 25 years. The city has prepared plans for a system to cost approximately $335,000.

PURIFICATION

Passaic Valley Sewer.—"The general rule observed by American cities of all sizes," said M. N. Baker, special expert of the U. S. Census in 1905, "is to discharge their sewage into the nearest available water until the nuisance becomes intolerable to themselves, and then to divert it from their own shores, resting content with inflicting their waste upon their neighbors below, until public protests or law suits make necessary the adoption of remedial measures." The truth of this statement was emphasized in 1911 by the approaching completion of plans for the great trunk sewer which will dump the

waste of many of the largest New Jersey cities into the already dangerously contaminated waters of New York harbor. This gigantic drain when completed will have a capacity of 360,000,000 gal., and will serve 103 sq. miles of land in the Passaic Valley. It is intended as a relief sewer to take care of sewage now dumped into the Passaic River which has long been polluted to the point of public scandal. The State of New York is attempting to restrain this work by suit in the Federal courts begun in 1908. The city of New York tried to intervene as an interested party, but an adverse decision was rendered by the Supreme Court in 1911. On September 5, 1911, hearings were begun in the city of New York before a special master appointed by the U. S. Supreme Court.

Bronx Valley Sewer.—With unabashed inconsistency, the State of New York, while actively engaged in fighting New Jersey in its attempt to pollute New York Bay, was pressing to completion the so-called Bronx Valley sewer, which is to do precisely the same thing on a smaller scale. This great drain is designed to take care of the sewage of the village of White Plains and the cities of Mount Vernon and Yonkers. The chief reason for its construction was to relieve the Bronx River, which for years has been nothing but an open sewer and an intolerable nuisance to Westchester County. A commission consisting of Mayor John J. Brown of White Plains, Congressman John E. Andrews of Yonkers, and William Archer, directed the work. In its completed form, the new sewer represents an expenditure of $2,500,000. It empties into the Hudson River at Yonkers.

Despite these conspicuous examples of reactionary methods in sewage disposal each year shows an advance in the public recognition of the danger of disposing of any considerable amount of sewage without first subjecting it to a process of purification to remove dangerous bacteria and at least a part of its other objectionable features. In fact, the only objection to the drains in question is the absence of purification works which may, of course, be added at any time.

New York Harbor.—Extensive experiments have been carried on by many public authorities, notably by the United States Government, the State of Massachusetts and the cities of Columbus, New Orleans, Philadelphia and New York. In New York, the so-called Metropolitan Sewerage Commission, which is engaged in studying the problem of the contamination of New York Harbor, made a notable attempt during 1911 to educate the public to the seriousness of the local situation. A carefully prepared exhibition was held during the Spring at the American Museum of Natural History in the city of New York, showing graphically and statistically just what sewage pollution means to New York city. As a result of the work of the Commission, there is a thoroughly awakened public sentiment in New York in favor of prompt measures toward the safeguarding of the harbor from further dangerous pollution.

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STATE TAXATION OF CORPORATIONS

EDWIN R. A. SELIGMAN

Lack of Uniformity.—One of the characteristic features of state taxation of corporations in the United States is its lack of uniformity. This is not surprising when we consider that the taxation of corporations is a relatively late growth and that the development of corporations themselves was a very unequal one in the various states. Where corporations were, as was usually the case at first, chiefly local in character and influence, it was but natural that local methods of taxation should be applied. But with the ever widening sphere of corporate activities, corporate interests have transcended local, and even state, lines until many of them have become national in scope. With this broadening of the field the heterogeneous character of state tax methods has come to be felt as an increasing burden.

Insurance Companies.—It is especially in connection with transportation companies and with corporations which, like the insurance companies, conduct a national business that the difficulties have been especially recognized. In the case of life-insurance companies, for instance, where a majority of the states tax them on gross premium receipts, the rate varies from six-tenths of one per cent. to two and one-half per cent., while in many of the other states the tax is assessed on the premium receipts, less certain deductions which differ in each state, such as death losses, dividends used to pay premiums, payments to policy holders and local agency expenses, returned premiums, losses, etc. Massachusetts, on the other hand, taxes them on reserves. Thirty-four states, moreover, contain retaliatory provisions which vary from state to state. New York, for instance, taxes its own domestic corporations at the rate of one per cent. on the premium receipts, Pennsylvania companies two per cent., Ohio companies two and one-half per cent., and so on.

Railroad Companies.—In the case of railroad companies, seven states—Maine, Maryland, New York, Ohio, Pennsylvania, Texas, and Virginia—tax them on gross earnings; two—Mississippi and North Carolina—levy licenses graduated according to earnings; eight—Connecticut, Delaware, Kentucky, Massachusetts, New York, Pennsylvania, Virginia, and West Virginia—tax them on capital stock; Pennsylvania also levies a tax on bonds, Connecticut on stock and bonds, Delaware on net earnings; Vermont, as an alternative, on gross

earnings. All the other states tax them according to a valuation which differs from state to state both in method and in result.

Telegraph Companies.—In the case of telegraph companies, 15 states—Arizona, Georgia, Maine, Maryland, Michigan, New Jersey, New York, North Carolina, New Mexico, Ohio, Oklahoma, Pennsylvania, Rhode Island, and Virginia—tax them on gross earnings; seven—Alabama, Connecticut, Delaware, Tennessee, Vermont, Virginia, and West Virginia—tax them according to mileage; Vermont proposes an alternative use of either gross earnings or mileage; Texas taxes them according to the number of messages; Montana according to the number of instruments; Florida and Mississippi levy a flat rate; and the other states tax them according to their property.

Telephone Companies.—In the case of telephone companies, 15 states—Arizona, Delaware, Georgia, Maine, Maryland, Michigan, Minnesota, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, and Wisconsin—tax them on gross receipts; four—Alabama, Delaware, Connecticut, and West Virginia—tax them on mileage; Vermont taxes them alternatively on mileage or gross receipts; Mississippi taxes them on mileage plus the number of subscribers; Texas and Montana tax them according to the number of instruments; Tennessee taxes them on instruments and population; Florida imposes a graduated license; Virvinia taxes them on their property, on their mileage, and on their gross earnings; and the other states tax them on their real and personal property.

Express Companies.—In the case of express companies a still larger number, eighteen—Arizona, Connecticut, Delaware, Georgia, Kansas, Maine, Maryland, Minnesota, Missouri, New Jersey, New Mexico, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Texas, and Washington—tax them on gross earnings with varying rates; two—Alabama and Florida—levy a flat license; three—Tennessee, Virginia and West Virginia—tax them according to mileage; North Dakota taxes them according to the size of the stations; Mississippi levies a flat rate plus a mileage rate; and the other states tax them on their real and personal property.

Sleeping Car Companies.—In the case of sleeping car companies, twelve—Delaware, Florida, Georgia, Maine, Maryland, Minnesota, New Jersey, New York, Ohio, Pennsylvania, Texas, and Vermont—tax them on gross receipts; four—Arkansas, Ohio, South Carolina, and Wisconsin—on capital stock; two—Alabama and Mississippi—according to mileage; two—North Dakota and Tennessee—levy a flat rate; and the other states tax them according to their real and personal property.

Growing Diversity of Methods.—In the above cases the taxes are sometimes exclusive of other taxes or methods, sometimes non-exclusive, and in no two cases are the rates or the methods of assessment the same. Moreover, where the property or capital stock or earnings are taxed, the tax sometimes applies to the entire capital or earnings, sometimes only to the capital employed or earnings received within the state. Here, as in the other points, there is absolute lack of uniformity.

In the case of ordinary business corporations, outside of transportation companies, the diversity of special methods is rapidly growing, largely owing to the question of the inclusion of the value of the franchise, which as intangible personalty is measured in a dozen different ways in as many states.

National Banks.—In only one class of corporations are we approaching a reasonable degree of uniformity, namely, in national banks, and that is almost wholly due to the fact that uniformity has virtually been imposed upon the separate states by federal law. National banks are almost everywhere reached by a taxation of the shares in the hands of the security holder. In the other classes of corporations, however, such federal interference has thus far been deemed impracticable. We must accordingly look to the spread of interstate comity and to a growth of sounder public sentiment to produce uniformity in corporate taxation.

XXI. MILITARY AND NAVAL

THE ARMY

PELHAM D. GLASSFORD

Present Unpreparedness for a Great War.—The spirit of the Army to-day is that of work and of systematic preparation in the present time of peace for the next great war in which this nation shall become involved, a war that is some day sure to come, how soon or with whom no one can foretell. To prepare for the defense of our country against this hidden war cloud of the future, vast amounts have been appropriated for our Navy and seacoast defenses during the past few years, but our mobile army (infantry, cavalry and field artillery) has been comparatively neglected. In the words of Gen. Wood, Chief of Staff: "Our present condition is one of unpreparedness for war with any first-class power. This unpreparedness is principally due, first, to the lack of any sufficient preparations for a mobile army, and second, to our failure to assemble an adequate reserve of war *matériel*.

A further discussion of this subject is out of place here, and the interested reader is referred to two articles by the well-known civilian authority Frederick Louis Huidekoper, appearing in the *U. S. Infantry Journal*, May to August, 1911.

A National Reserve the Greatest Need.—One of the greatest defects in our present military system, is the loss to the United States of the services of the soldiers it has trained. The regular army graduates by expiring enlistments about 25,000 men each year, all of whom have had three or more years of excellent military schooling. A similar condition exists with the organized militia. All control of these trained soldiers is lost as soon as their term of service is ended. These men should receive a small monthly pay and in return should keep the War Department informed of their address, and should be required to attend the annual maneuvers for a short period, every year or two years, receiving full pay while on this duty. A law for this purpose would soon place at the disposal of the nation in time of need, a reserve of over a quarter-million trained men, who have served in either the regular army or militia.

THE TEXAS MANEUVERS

Rapid Concentration of Troops.—On the night of March 6, 1911, unexpected orders were simultaneously received at a large number of army posts in the United States, ordering the concentration of a maneuver division at San Antonio, Texas, and a separate brigade (3 regiments of 12 companies each) of coast artillery troops at Galveston, the latter organized and equipped as infantry. All troops were ready to move within a few hours, and a large proportion fully equipped, and were eagerly waiting for the necessary transportation by rail or water. Transport ships were soon under way, and the railroad companies with a few exceptions, lost no time in doing their share, so that within a very short time all troops had arrived and were ready for field service.

The troops assembled at San Antonio comprised nine regiments of infantry, three of cavalry, two of field artillery, one battalion of engineers, two companies of signal corps, four ambulance companies, and

four field hospitals. On a war footing these troops should have totaled 20,000, but official reports show that the average number present during the encampment was a little less than 13,000.

Soon after July 10 most of the organizations were returned to their respective stations, and on Aug. 7 the Maneuver Division ceased to exist.

Object and Lessons of the Concentration.—The political and strategical object of the concentration in its relation to the Mexican revolution and the rumored negotiations of Japan with Mexico for a coaling station in Magdalena Bay, is almost entirely one of conjecture. (See V, *International Relations.*) Aside from the diplomatic significance and considerations involved, the concentration from a military viewpoint was a practical test on a large scale (for the United States) of the present system of transportation, organization, supply and camp sanitation, as developed and systematized since the Spanish-American War. The War Department has shown that the regular army can be quickly mobilized in any part of the country, fully armed and equipped, supplied with proper food rations, and kept in excellent health—a strong contrast to the condition that existed when the Spanish-American War broke out.

Rigid Camp Sanitation.—Never before in our army have such rigid sanitary measures been required and carried out. Food stored or in the course of preparation had to be covered except when actually being handled. Paulins which at first covered the kitchens were soon replaced by wooden shacks and screened. The kitchen wastes, both solid and liquid, were consumed by fire, in kitchen crematories, which consisted of shallow pits a foot deep, 4½ ft. long, and 2½ ft. wide, filled to the level of the earth with broken stone and surrounded by a wall of clay or stones a foot high. A fire was kept burning on this continually, and consumed all garbage thrown on it while the heated stones quickly evaporated the slops. Latrines were covered with fly-proof box seats with self-closing covers, and burned out daily with straw and crude petroleum. Picket-line droppings and the straw bedding for horses were collected and burned, and picket-line areas sterilized once a week by burning them over with straw and crude petroleum. These several precautions effectually kept down the number of flies and afforded no opportunity for their access to infectious material.

Typhoid Prophylaxis.—Voluntary anti-typhoid inoculations were introduced in the army two years ago, but the Texas maneuvers marked the first application and test of this preventive treatment of typhoid fever under service conditions. About one-fourth of the troops arrived already immunized, and the Medical Department of the Maneuver Division began immediately to inoculate the remaining three-fourths, and proceeded with this work as rapidly as the prophylactic culture could be supplied from the Army Medical School at Washington. (See also XVII, *Public Health and Hygiene,* and XXXI, *Medicine.*)

Results of Rigid Camp Sanitation and Typhoid Prophylaxis.—The health of military commands is usually measured by the average number constantly sick or non-effective in each 1,000 men. This for the Maneuver Division was 22 per 1,000 up to the first of July, and its smallness can be appreciated when it is stated that the average number sick for all troops in the United States for the year 1910, was 34 per 1,000. In other words, the health of these soldiers in camp, sometimes living in deep mud, and in other times in clouds of dust and under a semi-tropical sun, was better than in barracks surrounded by the comforts and sanitary appliances of post life. (See article by Colonel J. R. Kean, Medical Corps, U. S. A., entitled "The Sanitary Record of the Maneuver Division." *The Journal of the Military Medical Association,* Aug., 1911, Vol. LVII).

The following condensed table shows the sanitary relation of the Texas Maneuver Division to that of the Second Division of the Seventh Army Corps, assembled in 1898 at Jacksonville, Fla., for about the

same length of time, at nearly the same season of the year, and at almost the same latitude:

	Mean Strength.	Cases of Typhoid Fever Certain and Probable.	Deaths from Typhoid Fever.	Deaths from Other Diseases.
Maneuver Division 1911.....	12,801	2*	0	11
Second Division, Second Army Corps, 1898.....	10,759	2,693	248	281

* One of these two patients had not been immunized, the other had received but two of the three injections. This last case was very mild. Forty-nine cases of typhoid fever with 19 deaths were reported as occurring in the city of San Antonio during this period.

As a result of this proven value of anti-typhoid inoculation, typhoid prophylaxis will in future be compulsory in our army, and the treatment administered to all officers and enlisted men under 45 years of age, who have not had a well-defined case of typhoid fever.

Military instruction at the maneuver camp was handicapped by the large number of recruits to train, and the poor facilities afforded for field exercises and maneuvers in the neighborhood of the camp, except at Leon Springs, about 26 miles away.

Target practice, field exercises and problems were carried on at Leon Springs usually by one brigade at a time, but troops could not remain there long on account of the scarcity of water. The practice marches to and from Leon Springs by large commands were of much practical value. The last of these was a night march made by the entire division from Leon Springs to San Antonio.

Another feature of value was the opportunity given our general officers to command a larger body of troops than the usual maneuvers afford.

Militia Officers at the Texas Maneuvers.—Militia officers in large numbers from all the states were invited to attend the camp of instruction for short periods, as observers, and at times the number of militia officers in camp almost exceeded the number of regular officers. The reports from these officers show a varied difference of opinion regarding the benefits derived. Many were disappointed that they were not given temporary command of some of the regular troops and allowed to take an active part in the problems and maneuvers. The reports from others are enthusiastic in their portrayal of what was seen, and of the useful information picked up. Militia officers were dependent for instruction largely upon the organization to which they were attached, but all were given an opportunity to see the mammoth division bakery, division hospital, and other important features of the camp.

MILITARY AVIATION

Appropriation.—Congress appropriated this year $125,000 to be expended in the interests of military aviation, the first appropriation for this purpose that has been made in this country.

Flights and experiments have been made almost daily, principally at College Park, Washington, D. C., and eight officers have become proficient in handling the aeroplanes. The following are the types of machines now in use by the Army: one Curtiss 4-cylinder; one Curtiss, 8-cylinder; one Burgess-Wright; two Wright.

Wireless telegraphy has been proven feasible but no suitable wireless equipment for use on an aeroplane has yet been devised.

Bomb dropping has been found practicable, and a very promising controlling device is being perfected by our army aviators.

Aeroplane Control.—Glenn H. Cur-

tiss has invented a means of instantly shifting the control to either occupant of an aeroplane, a valuable asset when flying long distances or in case the pilot operating the machine becomes disabled by the enemy's fire. The post to which the steering wheel is attached is hinged at the bottom and can be instantly moved so as to place the wheel in front of either occupant. The spark control is attached to the wheel post, and the throttle placed between the two seats, so as to be accessible from either.

Night Flight.—Capt. Patrick C. Hamilton, an English army officer, and George Dyett, also an Englishman, made a flight at night to demonstrate that flying in darkness is not only practicable but safe when a searchlight is installed on the aeroplane as a means of finding a suitable landing place. This experiment took place at Hempstead, N. Y., in Oct., 1911. The light was covered at times while the machine was in the air, and when the motor was throttled down the location of the aeroplane could not be determined. Scouting by searchlight in aeroplanes may prove to be an important element in future wars.

Reconnaissance.—On Oct. 23, 1911, the aeroplane was employed for the first time in actual warfare. Lieut. Piazza of the Italian Army made an air reconnaissance from Tripoli. He circled over the desert in a Nieuport monoplane and located the Turkish infantry, intrenched in Zanzur Oasis, between 12 and 20 miles from Tripoli.

The officers of our army who are experimenting with the aeroplane, are trying to determine its powers and limitations in warfare. They estimate that on a scale of ten, the gaining and transmitting of information weighs nine, and the aggressive factor weighs one. There is no doubt that by far the greatest value of the aeroplane in future wars will be that of major reconnaissance, i. e., the location of large bodies of troops, ascertaining their front and depth, defensive positions, outposts, lines of communication, etc.

For minor reconnaissance, i. e., the determination of roadbeds, gradients, fords, structure of bridges, depth of streams, density of woods, etc., the aeroplane will be of use only as a vehicle for quickly transporting topographers to and from the location to be mapped or reconnoitered. Aeroplanes will also be of use in observing and directing the fire of artillery.

The Aeroplane as a Weapon of Offense.—Although aeroplanes will be able to do some damage by dropping bombs on the decks of vessels, on fortifications, storehouses, arsenals, railway bridges, etc., a few isolated shells of the small size that can be carried by an aeroplane, dropped with uncertain accuracy, would work only a limited amount of damage, and not have any serious effect upon the outcome of a war.

Dirigible Balloons.—The waning reputation of the dirigible airship is emphasized by the destruction of the mammoth military aircraft built by the British Government. Its construction was purposely delayed to take advantage of the experiments and experiences of other countries, and represented what seemed to be the best in a military airship, yet it collapsed in a nine-mile breeze as it was being taken out of its hangar for a trial.

The comparatively small scale on which our Army has so far taken up aviation can best be realized by a comparison with the French Army which has six aviation centers, employing nearly 200 aeroplanes, and many more machines being built. (See also XXXII, *Aeronautics.*)

CAVALRY

The International Horse Show.—The showing made by the entries from our Army in the international horse show in London, June, 1911, was only fair. However, the riding of our officers was excellent and the performance of our horses never gave cause for any ridicule. This is the first time that our Army has been represented in an international horse show abroad. Nine horses were entered in the competitions and were ridden by five selected cavalry officers. Some of the horses were owned by these officers, while others were donated to the government by public-spirited citizens.

The horse show consisted principally of jumping competitions. Our horses went at the jumps boldly and freely and were much admired for these qualities, but none of the horses that went at high speed, either from our own or other countries, took prizes. The winners were animals that took the jumps under perfect control, cool and deliberate in their action. The style of the winning riders was that of the famous French school of riding at Saumur. There were about 5,000 entries in all. The best showing was made by Russia, Belgium and France. Italy was not officially represented. (The official report of Major F. S. Foltz, 15th Cavalry, who was in charge of the American team is published in the *Journal of the U. S. Cavalry Association* for Sept., 1911).

Remount Depots.—Another remount depot has been added to the Quartermaster's Department for the general supply of horses to the army. This new remount depot was established at Front Royal, Va., and is known as the Front Royal Remount Depot.

The system of supplying horses to the Army from remount depots instead of by purchase, that we were so long in adopting, is gradually improving the quality of horses used in our Army. The system however has not been in operation long enough to make its advantages fully realized. (See XXII, *Live Stock.*)

The McClellan Saddle.—The McClellan saddle, which has been used in our Army since 1859, will soon be relegated to historical museums. This saddle was designed by Col. George B. McClellan, 1st Cavalry (later General), and adopted upon the recommendation of a board, two of the members of which were Col. Robert E. Lee, 2d Cavalry, and Col. J. E. Johnson, 1st Cavalry, later of Civil War fame.

The new army saddle (not yet officially adopted) now being given a thorough test, is more on the style of the flat or English saddle, and designed for rising to the trot, for which the McClellan saddle is not suitable.

Rising to the trot has proved itself easier on both horse and rider, nevertheless many of the old school will regret to see discontinued the dignified, close seat of the American cavalryman.

FIELD ARTILLERY

The School of Fire, a school for the instruction of regular and militia officers of field artillery, has been established at Fort Sill, Oklahoma, and raises the number of service schools in the army to 13. This school fills a need existing since 1905 when the field artillery was equipped with the present rapid-fire field guns, mounted on recoil carriages, with their almost unlimited possibilities of use in the open or behind a mask, firing over a protecting hill or woods with almost the same accuracy and even greater control than in the open.

THE ORGANIZED MILITIA

A long step in the right direction was made when the number of officers in the regular army was increased by 200, a large portion of this increase being for the purpose of furnishing instructors for the organized militia. At the request of a governor of a state, officers are detailed for duty with the organized militia of that state, not to exceed one for every regiment and separate battalion of infantry, or the equivalent in other troops. A large number of regular non-commissioned officers have also been detailed with different organizations of the organized militia. The War Department is only too willing to give assistance in any way that may tend to increase the efficiency of the organized militia, and during the past year classes of militia officers were given a special course at some of the service schools of the army. The attendance of a large number of militia officers at the Texas Maneuvers has already been spoken of.

FORTIFICATIONS

The Panama Canal.—In spite of considerable opposition in Congress, it was finally decided to fortify the Panama Canal, in order to render it secure in time of war and keep it open for the use of our Navy;

$3,000,000 was appropriated for the construction and equipment of seacoast defenses. One regiment of infantry has already been dispatched to the Canal Zone, and it is expected that barracks will be ready for another regiment before the beginning of April, 1912.

It is highly probable that upon the completion of the canal, a system of government will be established on the Canal Zone similar to the British government at Gibraltar. The main principle in the government of Gibraltar is that the highest authority is essentially military, the officer in command having the rank of a lieutenant-general. This officer, however, is chosen with regard to executive ability and a knowledge of local government.

Island Possessions.—Congress has this year appropriated nearly $2,000,000 for the construction and equipment of seacoast defenses in the Philippine and Hawaiian Islands.

THE MEDICAL DEPARTMENT

The Year's Progress in the Medical Department includes:

1. Proof of efficacy of antityphoid vaccination in the field, as evidenced by the results obtained at the Texas maneuvers.

2. Experimental evidence as to the etiology of beri-beri in the Philippine Islands, with the practical disappearance of this diseases from the Philippine Scouts, the native soldiery of the Islands.

3. Proof of the existence of Mediterranean fever in Texas.

4. Continued successful sanitation in the Panama Canal Zone.

5. Continued success of anti-hookworm measures, in Porto Rico.

6. Advanced work in the study and recognition of pellagra in the United States.

7. The collection of large quantities of field equipment, sufficient to take care of 16,000 sick and wounded. This equipment would be the amount required by ten divisions and comprises, approximately, 40 field hospitals, 40 ambulance companies, 20 evacuation hospitals and 10 base hospitals.

Organization of a Dental Corps.—The heretofore contract dental surgeons have been organized into a Dental Corps, to form a part of the Medical Department of the Army. The Dental Corps consists of Dental Surgeons who are commissioned as officers, and Acting Dental Surgeons who have the same official status, pay and allowances formerly possessed by contract dental surgeons. After three years of satisfactory service, an Acting Dental Surgeon is eligible for appointment as Dental Surgeon with the rank of first lieutenant. The number of Dental Surgeons is limited to 60.

SUPPLY DEPOTS

The War Department has adopted a policy of establishing a chain of large depots for the equipment and supply of troops, both regular and militia, in case of mobilization. The depots are to be located in the different territorial divisions. The first one is now in an advanced state of completion at Philadelphia.

INCREASE IN NUMBER OF OFFICERS

The Infantry, Cavalry, Field Artillery and Coast Artillery received an increase of 200 extra officers, to make provision for militia instructors, the detail of 20 more officers in the Quartermaster's Department, and partially to overcome the decreased efficiency of the Army due to the absence of so many officers from their organizations.

Provision has been made by Congress to increase the Engineer Corps by 12 officers a year for 5 years, a total increase of 60 officers.

A temporary increase in the number of officers of the army has been brought about by the "Readjustment Bill" which provided that those officers losing rank due to the system of regimental promotion in force prior to Oct. 1, 1890, should be promoted to the rank they would have been entitled to hold had promotion been lineal in each arm of the service as it is to-day. These officers are considered as additional officers in their new grades.

	Major generals.	Brigadier generals.	Colonels.	Lieutenant colonels.	Majors.	Captains.	First lieutenants.	Second lieutenants.	Chaplains.	Total commissioned officers.	Enlisted men.
General officers	6	15								21	
Adjutant General's Department	1	1	5	7	10					24	
Inspector General's Department		1	3	4	9					17	
Judge Advocate General's Department		1	2	3	6					12	
Quartermaster's Department		1	8	12	27	78				126	200
Subsistence Department		1	3	4	9	27				44	203
Medical Department		1	15	24	105	111	a415			a671	(b)
Pay Department		1	3	4	20	25				53	
Corps of Engineers		1	11	18	35	47	45	43	1	201	1,942
Ordnance Department		1	6	9	19	25	25			85	730
Signal Corps		1	1	2	6	18	18			46	1,212
Bureau of Insular Affairs		1	1		1					3	
Fifteen regiments of cavalry			15	15	45	225	225	225	15	765	13,266
Six regiments of Field Artillery			6	6	12	66	78	78	6	252	5,416
Coast Artillery Corps		1	14	14	42	210	210	210	14	715	18,471
Thirty regiments of infantry			30	30	90	450	450	450	30	1,530	27,007
Porto Rico Regiment of Infantry						11	10	10	1	32	576
Military Academy			4	3						7	501
Detached officers			8	9	27	79	77			200	
Additional officers			24	19						43	
Recruiting parties, recruit depots, and unassigned recruits											7,000
Service—school detachments											583
United States Military Prison guards											320
Indian scouts											75
Total Regular Army	7	27	159	183	463	1,372	1,553	1,016	67	4,847	77,502
Additional force:											
Philippine scouts						52	64	64		180	5,732
Grand total	7	27	159	183	463	1,424	1,617	1,080	67	5,027	83,234

a Includes 166 first lieutenants of the Medical Reserve Corps on active duty, and 60 dental surgeons.

b Under the act of Congress approved March 1, 1887 (24 Stat. L., 435), the enlisted men of the Medical Department (Hospital Corps) are not to be counted as part of the strength of the Army. The authorized strength of the Hospital Corps is 3,500 enlisted men.

APPOINTMENTS TO THE U. S. MILITARY ACADEMY

Heretofore congressmen were authorized to have only one appointee at the U. S. Military Academy at a time. In order to increase the number of cadets about 25 per cent., as soon as a cadet reaches the First Class or senior year, the Congressman who appointed him is authorized to make another appointment.

Pay of Officers of the U. S. Army. —See table, page 363, AMERICAN YEAR BOOK, 1910.

PENSIONS

Pensions appropriated for the Army and Navy for the fiscal year commencing July 1, 1911, and ending June 30, 1912, amount to $153,686,500, and including deficiencies in pension appropriations for prior years, amount to $156,186,584.

APPROPRIATIONS

Summary of War Department Appropriations, for the fiscal year commencing July 1, 1911, and ending June 30, 1912:

For the maintenance of the United States Army, pay of troops, support of the U. S. Military Academy and service schools, cost of target practice and manufacture of stores and supplies, etc.	$94,210,400
Isthmian Canal	48,564,260
Public Works, including River and Harbor improvements, construction of fortifications, buildings at Army Posts, etc.	38,154,783
Miscellaneous, including the raising of the battleship Maine, expenses incidental to National Parks, Soldiers' Home, surveys, relief of sufferers from famine in China, equipment and clothing for the militia, etc.	15,450,197
Salaries and expenses, such as stationery, rent of buildings, etc., at the War Department, Washington, D. C.	2,041,008
Total	$198,420,648

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THE NAVY

CARLOS GILMAN CALKINS

ADMINISTRATION

Navy Department.—After a year's test of the change in organization due to the appointment of aids to the Secretary of the Navy, it was officially stated that "the business of the Department has been expedited, and the Secretary is, without question, better informed on the workings of the Department than has been possible under any previous system." The aids are not appointed by the President, and they have no executive authority and do not sign orders to the bureaus or the fleet. The Aid for Operations is credited with plans for reorganizing the fleet and directing its manœuvres; this place has been filled by Rear-Adm. Richard Wainwright, whom Rear-Adm. Charles E. Vreeland relieved in December. Rear-Adm. William P. Potter, Aid for Personnel, has supervised recruiting, the detail of officers, and the discipline of the fleet. Rear-Adm. Frank F. Fletcher, Aid for Material, has scrutinized requests for repairs and effected notable economies thereby. Repairs have been expedited and the progress of all work examined by the Aid for Inspection, Rear-Adm. Aaron Ward holding that post until April, 1912.

The Assistant Secretary has charge of Yards and Docks, including all public works on shore, and of the affairs of the Marine Corps. The Commandant of this branch of the Navy is Major-Gen. William P. Biddle, who was advanced from the rank of Colonel on Jan. 31, 1911. Ten staff officers are attached to his headquarters in Washington.

Appropriations.—For the year ending June 30, 1912, Congress voted $126,507,535 for the naval service. The previous appropriation was $131,350,854, to which $1,654,422 was added by special legislation. The apparent reduction is due to the difference in the current demands of unfinished contracts for the increase of the Navy, which were $33,770,346 for 1911 and $26,005,547 for 1912. There is no decrease in the expenditure authorized for new tonnage.

The largest item for 1912 is $35,069,026 for the pay of the Navy. Other allowances for personnel are moderate, the Bureau of Navigation handling $2,253,865, and the Bureau of Medicine and Surgery $442,000. The Bureau of Supplies and Accounts receives $7,430,000 for rations and $694,000 for other purposes. Of the allotments for material the Bureau of Ordnance has $11,854,500, with control over the $10,532,828 elsewhere appropriated for the armor and armament of new ships. The Bureau of Equipment has $8,428,300, nearly half of which goes for coal and other fuel for ships. The Bureaus of Construction and Repair and Steam Engineering are allotted $9,841,144 and $6,394,000 respectively, and they have joint supervision over the $13,531,785 granted for the hulls and machinery of new tonnage. For Yards and Docks, including public works of various classes in all parts of the world, $9,001,477 is authorized. The Marine Corps costs $7,372,958.

Navy Yards.—These establishments constitute a financial problem on account of their faulty grouping and excessive number. They were originally located with reference to the resources of isolated communities, but modern means of communication have created an industrial unity independent of local conditions. Strategic conditions were slighted when some yards were occupied, and others are now tactically worthless because they are almost inaccessible to modern ships, because they cannot be defended against a hostile fleet, or because there is no supply of labor and material within the line of defense. The navy yard at New York satisfies all conditions, except that it is cramped for space, and a scheme for enlarging its berthing and docking capacity is now under discussion. Norfolk offers almost every requisite, and it will be developed accordingly. Washington has a complete gun-factory; and it may be that other navy-yards will be devoted to special manufactures. Boston retains many advantages; but other yards on the Atlantic coast, as well as the two within the Gulf of Mexico, offer little to compensate for the cost of maintenance. It is not proposed to dismantle all of these, though Port Royal is to be made a disciplinary camp for refractory seamen; but it is improbable that further expense will be incurred for their development. Congress may be asked to provide for a navy-yard of the first class in Narragansett Bay where conditions are favorable both from the strategic and industrial point of view.

Geographically Key West is to be preferred to New Orleans or Pensacola; but neither its harbor nor its industries provide for a navy-yard of the first class. Guantánamo has a spacious harbor commanding lines of approach to the Panama Canal; and the government of Cuba has granted its use as a station for our fleet. Nothing has been done to provide it with dry-docks or shops, except to appropriate $378,000 for 1912; but our fleet spends some months of every winter there.

Similar arguments have led to considerable developments at Pearl Harbor, near Honolulu, in advance of the completion of the Canal. It will share with New York and Norfolk on the Atlantic Coast and Puget Sound on the Pacific the advantage of providing a dry-dock for the larger type of battleships. The navy-yard at Mare Island is hardly more accessible than that at Philadelphia; and unless the dredging operations now in progress provide a permanent channel for ships of heavy draught, its importance must decline.

Scientific Management.—The need of improvement in economic control has long been apparent to those who compared the cost of maintenance of our navy-yards with the figures showing their production. Unless they be regarded as chiefly military and industrial reserves for repairing the casualties of warfare, such comparisons are inevitable; and the demand for practical reform will take little account of local interests. Concentration of authority in order to secure coördinated effort is the obvious remedy; but there has been much debate as to its application. Previous to the nomination of the present Secretary it had been decided to designate a naval constructor as

manager, leaving, according to the last year's report of the Navy Department, the commandant of the navy yard "nominally in full control but really without much supervision over the manager," and reducing officers of more age and experience in special departments than the manager to service as inspectors. The recent policy of the Department is to combine industrial efficiency with the requirements of the fleet by restoring the authority of the commandant in regard to all work and employing officers of the line as managers of certain shops, partly with a view to prepare them for engineering duties afloat. The movement in this direction is too recent for comment on its results. It must go hand in hand with improved systems of accounting, as well as with those reforms of method more specifically known as scientific management. Measures of this kind may be more or less unwelcome to workmen until experience has demonstrated their value and convenience. (See XXXII, *Industrial Management.*)

All public works at the navy yards and elsewhere, including hospitals, barracks and magazines, are now subject to the control of civil engineers or other representatives of the Bureau of Yards and Docks, whether carried on by contract or by day work. There is a constant demand for the enlargement of drydocks, which will soon be met at four of the navy yards; and new machinery to be used in repairing ships is also required. An appropriation has been made for two floating cranes capable of lifting 150 tons and costing $325,000 each; one of these will be sent to Pearl Harbor and the other kept at Boston.

Naval Education.—The Naval Academy at Annapolis, of which Capt. John H. Gibbons became Superintendent in June, relieving Capt. John M. Bowyer, who retires with the rank of Rear-Admiral, has enlarged its scope by offering post-graduate courses in steam engineering for 20 officers detailed by the Department. About 700 midshipmen are taking the regular course, and about 100 officers are detailed for their instruction and discipline. For civil establishment and maintenance the Naval Academy has about $600,000 annually. The reconstruction of its buildings, for which Congress voted $10,000,000 in 1903, has been practically completed.

The Naval War College at Newport may be regarded as an adjunct to the fleet, for which it undertakes to solve various strategic and tactical problems. The small class of commissioned officers, many of them senior in rank, which take part in the summer conference also receive instruction in naval history and international law.

The Marine Officers' School is to be removed from the station at Port Royal, S. C., to make room for a disciplinary or detention camp for men sentenced by courts-martial. Marine officers will be instructed at a military school to be established at Norfolk, Va.

The Naval Medical School at Washington gives newly-appointed assistant-surgeons an advanced course of one year before assigning them to active duty in the Navy. This advantage does not serve to bring the Medical Corps up to its full numerical standard, however.

CONSTRUCTION AND ARMAMENT

Programme.—The General Board of the Navy, basing its demands upon technical comparisons with foreign navies and upon the view that no battleship can be considered as fit for the first line more than 20 years after construction, recommends an appropriation of $100,000,000 for the increase of the Navy. Nearly half that sum is required to build four battleships to replace those which should be laid aside by 1914; the rest it is proposed to spend on destroyers, scouts, and submarines, types in which our fleet is notoriously deficient. On the other hand a senator has proposed to limit appropriations for the Army and Navy to $100,000,000 for each service. The two programmes are evidently irreconcilable. The sum proposed by economists would maintain the Navy without further increase until the

need for repairs brought about a specific reduction of force. The law forbids the expenditure of more than 10 per cent. of the value of ships in making repairs, though exceptions are made by special enactment. The result of a return to the policy of patching ships for indeterminate duration is familiar to those who have followed the fortunes of the Navy since the Civil War. Money is wasted because efficiency cannot be maintained by any such process.

Without regarding the progress of foreign navies too closely or laying stress on the practice of replacing superannuated ships in regular course, the provision for two battleships, the average of the last decade, if accompanied by the construction of a due proportion of cruisers, scouts, and torpedo craft, might serve to maintain the Navy at its present force. Its relative position, now second to the British fleet, will be lost within three years by the advance of the German navy under its authorized programme.

Battleships.—The *Maine* and the *Texas* are the only vessels of modern design which have been removed from the official list. This enumerates 44 ships of the first rate, according to tonnage; but 13 of these are armored cruisers, by no means of the "cruiser-battleship" type. Others are of types displaced by the *Dreadnought;* their mixed batteries comprise four 12-in. guns in the forward and after turrets, and an intermediate battery of 6-in. or 8-in. guns; 25 of these may be fit for service, the *Oregon*, for example, having just been repaired at an expense of $1,000,000. In 1910, however, four of the modern type were commissioned: the *Michigan* and *South Carolina*, with a displacement of 16,000 tons, carry eight 12-in. guns and are slightly inferior to the original *Dreadnought;* and the *Delaware* and *North Dakota*, of 20,000 tons, carry batteries of ten 12-in. guns. The *Utah* and *Florida* are the new ships of 1911, and they also have ten heavy guns with a displacement of 21,825 tons. The *Arkansas* and *Wyoming*, authorized in 1909, will be ready for service early in 1912, and they show an advance to 26,000 tons, with twelve long 12-in. guns mounted in six turrets. The *Texas* and *New York*, begun in 1911, require 27,000 tons displacement for a battery of ten 14-in. guns in four turrets, including triple turrets forward and aft.

The limit of cost for the hulls and machinery of the vessels authorized in 1910 and 1911 is $6,000,000, with $400,000 added for those built in navy-yards, like the *Florida*. The cost of the *Utah*, built in a private yard, was $3,946,000 by contract. The difference may be less under the new requirement that the 8-hour day shall be kept by all contractors who build battleships; but the aggregate cost must be increased. A bid of $5,830,000 for the *Texas* has to be compared with an estimate of $7,500,000 for building the *New York* in a navy-yard. The additional cost of armor, armament, and equipment cannot be ascertained in advance, but it may be estimated at 75 per cent. of the cost of the hull and machinery, thus bringing the total for the latest battleship of navy-yard construction up to $11,200,000, which is about the contract price of the Argentine battleships now under construction in the United States.

Cruisers.—No vessel of this class has been added to the Navy since the completion of the three scout cruisers of 3,750 tons displacement in 1908 at a total cost of $5,840,638. The military value of the *Birmingham*, *Chester*, and *Salem* depends upon their speed, which is about 25 knots. Two small gunboats were authorized in 1911.

Destroyers.—The cost of torpedo-boat destroyers was estimated at $825,000 each for the eight authorized in 1911. Yet in spite of an increase of tonnage from 750 tons displacement to nearly 1,000, and the imposition of the 8-hour day, which has been estimated as increasing the cost by 20 per cent., tenders as low as $760,000 have been made. The total expenditure for destroyers, torpedo-boats, and submarines was $20,000,000 prior to 1911; and about $600,000 annually has been appropriated for the supply of torpedoes.

Submarines.—The estimate for submarines of 525 tons displacement

for 1911 is $500,000 each; and tenders are available at that rate. A submarine of the Lake design is to make 14 knots on the surface and 9½ knots submerged, and she will have a cruising radius of 2,500 miles. Experiments of last season have shown that a smaller boat can remain submerged for 12 hours at sea while making a voyage of 120 miles, and that a crew can remain on board while 144 ft. under water. Submersion to the depth of 200 ft. is made a structural test, but crews are not kept on board during the trial. Six torpedo tubes constitute the armament of the latest submarine.

Colliers.—Seven fleet colliers carrying 12,500 tons of coal at 14 knots' speed have been authorized since 1908. Experimental machinery and appliances are to be tested in these; and it has been found practicable to transfer coal at the rate of 70 tons an hour by wire cables to a vessel towed astern by the collier. The *Neptune* can deliver 100 tons per hour on the deck of a vessel abreast each one of her 12 hatches by handling a clam-shell bucket with special transmission gear.

Armor.—Belts of 12 in. of Krupp steel protect the water line of recent battleships, with side armor and turrets of slightly less thickness. Thin armor for sheltering light guns is no longer to be trusted; but it is still hoped to protect the vitals of the ship at fighting range, though modern experiments leave this in doubt. The price of armor in the United States appears to have fallen from $675 to $341 per ton.

Armament.—It has been calculated that the battleships of the American Navy carry 68 guns capable of piercing 8 in. of armor at 8,000 yards. This refers to the 12-in., 45-calibre gun; by increasing the length by 5 ft., the 50-calibre 12-in. gun will have much greater power; and the new 14-in. gun will be superior to any weapon now afloat. A pattern gun was completed and tested "in advance of the authorization of the ship which will be the first to carry it," as the Bureau of Ordnance reported in 1910. The all-big-gun ships carry anti-torpedo guns of small calibre, but not much inferior to the intermediate batteries of previous types. The *Arkansas*, for instance, has 5-in. guns, most of them behind substantial armor; and it is inconceivable that these should not be used in a fleet action.

Speed and Motive Power.—There has been no attempt to give American battleships a greater speed than 20 or 21 knots. Scouts at 26 and destroyers at 29½ knots are also accepted by the Department. For such speeds no innovation in motive power need be planned; and there is a disposition to regard the reciprocating engine as better adapted to the battleship than the turbine. The *Delaware* has a better record than the *North Dakota*, which is propelled by turbines, and the scouts gave some support to this view on their trials. Destroyers have turbines which seem to answer, but these may be supplemented by reciprocating engines in the group now under construction. Experiments are tried in the new colliers; the *Neptune* has turbine reduction gear which the failure of her turbines has prevented her from testing; and the *Jupiter* is to be fitted for electric propulsion.

THE FLEET

Command.—The day when admirals had charge of stations rather than squadrons, and dealt with diplomatic rather than professional problems, is past. The Department is now prepared to direct tactical and strategical manœuvres, and squadrons are no longer localized in foreign waters. All battleships in commission belong to the Atlantic Fleet, and the number varies from 16 to 24. Combined exercises with a torpedo fleet numbering 33 vessels are carried out; and the fifth division of the Fleet is made up of four cruisers, two of which are armored. The Pacific Fleet has six armored cruisers and three divisions of destroyers. The Asiatic Fleet has a mixed force, more or less adapted to local conditions, with divisions of destroyers and submarines.

Rear-Adm. Seaton Schroeder was relieved from the command of the Atlantic Fleet, preparatory to his retirement for age, by Rear-Adm. Hugo Osterhaus on June 1. The divisions of this Fleet are commanded by

Rear-Adms. Charles J. Badger, Aaron Ward, Thomas B. Howard, and Bradley A. Fiske.

Rear-Adm. Chauncey Thomas relieved Rear-Adm. Edward B. Barry, who resigned from the Navy in Jan., 1911, as Commander-in-Chief of the Pacific Fleet, of which Rear-Adm. William H. H. Southerland commands the first division.

Rear-Adm. Joseph B. Murdock has retained command of the Asiatic Fleet throughout the year, and he has spent some months in the Yangtse watching the progress of revolutions in China.

Operations.—Except while under repair at the different navy yards to which they are attached, the battleships have divided the year between cruising and exercises in port. Guantánamo offers many advantages for winter drills, and the summer programme of the Atlantic Fleet is carried on in the Chesapeake or Cape Cod Bay. Divisions keep company except when the inspection or trial of single ships is in progress, and tactical improvement is always kept in view. During the summer, the battleships had to approach a section of the coast defended by the Atlantic Torpedo Fleet under the command of Commander Edward W. Eberle, and various opinions are held concerning the success with which the destroyers, torpedo boats, and submarines were able to resist the attack. The value of each of these types in a scheme of coast-defense was clearly demonstrated.

After the return of the divisions of the Atlantic Fleet from the French and English coasts in 1910 it was manifest that a similar voyage of courtesy to the Baltic was appropriate; and a division under Rear-Adm. Badger visited the principal ports of northern Europe in June. A similar cruise to the Mediterranean was planned for the winter of 1911; but a naval review of the Atlantic Fleet at New York and of the Pacific Fleet off Los Angeles was substituted. Over 100 vessels assembled at New York for inspection and review. The Pacific Fleet executed a similar programme; and its target practice and other exercises will be continued on the coasts of California and Washington, since Magdalena Bay is no longer a naval rendezvous. The Asiatic Fleet finds Manila Bay a convenient drill-ground.

Personnel.—On January 1, 1911, the Navy had 1,255 commissioned officers of the line, one admiral of the Navy, 26 rear-admirals, 82 captains, 117 commanders, 209 lieutenant-commanders, 354 lieutenants, 24 junior lieutenants, and 466 ensigns); 277 midshipmen were at sea; and there were 659 warrant officers. The different grades of the Medical Corps count 311; and the Pay Corps has 201 officers. Congress has authorized 44,000 men to man the fleet, with 2,500 under training; but this does not provide complements for all the reserve ships which might otherwise take part in the naval review. The course of four-months' training for recruits has also to be shortened to meet the demands of the fleet. The term of enlistment is four years, and much is done to make the service attractive. Thus, the ration now costs 45 cents a day; and there are fairly liberal provisions for pay and for retirement.

The Marine Corps has 334 officers (30 of the staff and 304 of the line), with 9,500 enlisted men. While the marines perform guard duty and exercise with the guns on board the larger vessels of the fleet, most of them are distributed at shore stations and in battalions for service in the islands.

Target Practice.—After the Civil War ended in 1865, ordnance experts advised against any effort to increase the accuracy or penetration of naval guns at ranges beyond 2,000 yd. Rifled cannon had won the day before 1881; but the Spanish-American war was fought before gunnery had advanced far enough to utilize the full power of a modern battery. As the result of reports from Capt. William S. Sims on the methods in use in the British navy, the twentieth century has witnessed the systematic training of gun-pointers. Beginning at 1,600 yd. in smooth water and counting nothing except actual hits, target practice gave results hitherto unheard of. Progress was stimulated by trophies and pennants for ships and money prizes for marksmen.

Youths without sea experience soon became expert gun layers; guns' crews were trained for exact and rapid work; and midshipmen became expert spotters and range finders. When reliable instruments for range-finding had been found, electrical machinery for training and loading installed, and stations for fire control equipped, the time was ripe for a further advance.

This was realized when battle practice at extreme ranges and under variable conditions of wind and speed became the order of the day. Ships now approach the targets at angles which vary the range, fire in rough water, and aim at objects dimly seen on account of darkness or distance. Practice off the capes of the Chesapeake during the past summer was carried on at ranges of more than five miles, using reduced charges to correspond with even greater distances, with most satisfactory results. Besides firing at anchored or moving targets, upon which hits show as perforations, certain ships were designated to fire at armored vessels of obsolete type to test the resistance of armor as well as accuracy of fire. Experiments of this nature are still in progress with the *San Marcos*, formerly the *Texas*, as a target. Her upper works have been riddled at extreme ranges; and it is doubted whether shore-batteries could be worked under such fire as has been directed against this vessel. Naturally, the detailed results of such trials are not available for discussion.

The highest distinction that can be awarded to any vessel of the fleet is the battle-efficiency pennant. This was won by the *Michigan* for "the highest combined final merit in gunnery and engineering for the year ending June 30, 1911," as stated in the President's letter to Capt. N. R. Usher, her commander. Similar awards are made for destroyers and vessels of other classes; and the considerable sum appropriated for this purpose is duly distributed among the gun-pointers and other members of winning crews.

Steaming Efficiency.—Recognizing the fact that the efficiency of any ship in battle depends upon the performance of her engines as well as that of her battery, and that "her value as a strategical unit is dependent upon the economical use of such amount of coal, oil, and other similar supplies as it is possible for her to carry," engineering competitions were inaugurated in 1908 during the cruise of the 16 battleships around the world. Such competitions are now a regular part of the discipline of the fleet; and the results have been excellent. Both for speed-trials and for ordinary cruising the performance of the ships has improved; and the economy in fuel and lubricating material has been notable. Gunnery and engineering are combined in giving credit for battle efficiency; but a special trophy, with minor rewards, is given to the vessel in each class which makes the best record at steaming at all speeds, taking in the factor of economy. For the nine months following October 1, 1910, the armored cruiser *North Carolina* has been declared the winner in the battleship class, and Capt. Clifford J. Boush and the engineering officers of his ship have received official commendation.

The most conspicuous record for long-distance cruising during 1911 has, however, been made by the *Delaware*, commanded by Capt. Charles A. Gove. After a cruise of 9,000 miles in European and West Indian waters, she was sent to Valparaiso; sailing on Jan. 31, she made 17,000 miles at an average speed of 13 knots, and returned to Boston on April 26, having burned 6,664 tons of coal at sea. After less than a day in port the *Delaware* sailed for a full-speed trial, and had no difficulty in making over 21 knots an hour for 24 hours, showing that her machinery was in perfect condition. She carried the flag of Rear-Adm. Charles R. Vreeland at the review which followed the coronation of George V; and it was noted that she was 100 tons larger than any other battleship present at Portsmouth on that occasion. No other could have shown a better cruising record; and it may be reckoned that her cruising radius at 10 knots is no less than 10,000 miles.

Aeronautics.—Recent experiments

have shown that aeroplanes can rise from the water or from the deck of a ship without difficulty; and a successful landing was made on the deck of the *Pennsylvania* at San Francisco. Whether bombs can be dropped on the deck of a battleship has not been demonstrated; but a gun for repelling aeroplanes has been devised and tested by the Bureau of Ordnance. The special value of aviation for the naval service relates to its use in scouting, and depends largely upon the practicability of sending wireless messages during flight. A school of aviation is planned, and several officers have been trained in flying. (See XXXII, *Aeronautics.*)

Wireless Telegraphy.—Though the principal stations for this service have to be established on shore, its naval uses depend on the practicability of communicating with the fleet when cruising. For messages between scouts and consorts at sea the wireless telegraph and telephone may be expected to deprive visual signalling of practical importance. From a tower 600 ft. high to be erected at Arlington the Navy Department counts upon a radius of communication of 3,000 miles. (See XXVIII, *Physics;* and XXXII, *Electrical Engineering.*)

COMPARISON WITH FOREIGN NAVIES

Naval Programmes.—A definite policy for increasing the armed force of a nation is apt to be based on conscious rivalry, and it must depend either upon the support of public opinion or upon more or less absolute authority. The Navy Law of the German Empire established a standard for the decade 1908-1917: "to lay down each year from 1908 to 1911 three battleships and one armored cruiser, and each year from 1912 to 1917 one battleship and one armored cruiser; also each year from 1908 to 1917 two protected cruisers and 12 destroyers." The British Navy League chose to regard this as a challenge; and its programme requiring "the laying down of two capital ships to every one commenced by the next strongest naval power" was accepted by public sentiment throughout the British Empire. Though the government hesitated over this demand, the maintenance of the "two-power standard"—the United States Navy being left out of the comparison—has been provided for, in spite of the enormous expense involved in bringing the fleet up to the type established by the completion of the *Dreadnought* in 1906. Expert opinion gives the British Navy 27 completed ships of that type by April, 1913, when the German fleet cannot have more than 13 ready for service. The current notion that the German Admiralty has "wantonly accelerated" the building programme from sinister motives seems unwarranted.

The French programme up to 1917 is expected to provide two battleships each year. Italy has been forced to accept the fourth place among the naval powers of Europe; and her naval officers are now watching the progress of the Austrian navy with some concern, since both powers are engaged in building *Dreadnoughts.* Russia has a definite programme to be completed in 1930, when 16 battleships will be ready for service in the Baltic, with a Black Sea squadron 50 per cent. stronger than the naval force of the other states bordering on the Black Sea.

Japan counts on completing at least nine battleships of the modern type by 1917; but her efforts are hampered by lack of funds and by the necessity of purchasing both vessels and materials abroad, though battleships have been built in both public and private yards in Japan. (See *infra,* "The World's Navies.")

Expenditures.—The following table shows the present rate of expenditure and the increase during the past decade:

	Expenditure 1910–1911.	Per cent. Increase since 1901–2.
Great Britain	$197,333,982	49
United States	133,005,552	72
Germany	103,202,537	123
France	73,011,872	9
Russia	47,256,569	4
Italy	35,719,861	49
Japan	36,889,158	72
Total for seven powers	$626,419,531	48

The proportion allotted for pay of the United States Navy is much greater than with fleets manned by conscription. British crews are paid for service; but the amount received by a force of 130,000 is no greater than that required to pay 50,000 Americans.

Construction.—Since Great Britain inaugurated the era of all-big-gun or single-calibre battleships by building the *Dreadnought* in 1906, her progress has been the standard for all navies. After completing 10 battleships and four cruiser-battleships of the new type, a further development was noted in 1910, when two battleships were completed and six launched. These should be ready in 1911, and the *Orion*, of 5,000 tons more than the original *Dreadnought*, tested the ten 13.5-in. guns of her broadside in September.

Of the five "capital ships" of the 1910-11 programme, four are battleships of the *King George V* type, a trifle larger than the *Orion*. The new cruiser-battleship *Queen Mary*, like two others in progress, gains 5,000 tons over the *Orion* by increased length—660 ft. instead of 545—wears 9-in. armor in place of 12-in., and mounts eight turret guns for 10, devoting the gain to engines and fuel. It is expected that these powerful cruisers of about 27,000 tons will be able to steam 28 knots as against the 21 of the more heavily armed ships.

Germany counted 13 ships of the *Dreadnought* type when the *Friedrich der Grosse* was launched on June 10, 1911; and six battleships and four cruiser-battleships are now in progress. Particulars are withheld, but these vessels are supposed to have lighter guns than British or American battleships of equal date. Nor are all their turrets placed on the central line to give the battery its full power in broadside as in most recent designs.

France has five battleships of 18,350 tons, the *Danton* class; and four of the *Courbet* class, improved *Dreadnoughts* of 23,000 tons, may be ready in 1913. Turrets mounting four guns are proposed for these.

Italy has triple turrets in the *Dante Alighieri*, of 19,000 tons, and the *Cavour*, of 22,000 tons, launched in 1910 and 1911, respectively. The latter and two consorts will mount thirteen 12-inch guns in five central turrets, the pair of two-gun turrets overlooking three-gun turrets at bow and stern. Russia has also launched ships of similar design; but the triple mounting does not find favor in England, where warnings are uttered against "putting all the eggs in one basket," a phrase which has been applied in every discussion during the evolution of the battleship.

Special interest attaches to the Argentine battleships *Rivadavia* and *Moreno*, which are to be built and armed in the United States at a cost of $23,000,000. The former was launched at Fore River near Boston in September. With 27,500 tons displacement, they carry twelve 12-in. 50-calibre guns in six central turrets, and their armor weighs 7,000 tons. Triple turbines are expected to give a speed of 22½ knots and a radius of 7,500 miles at 15 knots. The contracts were secured in competition with European builders by low bids rather than by diplomatic agency.

Ordnance.—Up to 1911, the 50-calibre 12-in. gun was the most powerful weapon afloat; but it has been displaced by the 13.5-in. guns of the *Orion;* and these have been fired at sea without injury to the ship or the turrets. The 10 guns fire a broadside of 12,500 pounds, while the eight of the original *Dreadnought's* broadside fired only 6,800. Wire-wound guns are still preferred by the British navy over those built up of steel tubes. A recent exhibit made by the Vickers Co. shows a 12-in. gun with its inner tube wound with 130 miles of wire with a cross section of 0.25 by 0.06 and tensile strength of 100 tons for a section of one square inch. This was shown in comparison with a similar gun built up by shrinking one tube over another in the usual manner. Germany has at last advanced to guns of 12-in. calibre, though her early *Dreadnoughts* carry only 11-in. guns in their turrets. The lighter guns have less power against armor than those mounted in British and American battleships, but it is claimed that

they will endure a much greater number of fires, which may be a prime tactical advantage.

Torpedoes.—The latest model of the Whitehead type for the British fleet is 21 in. in diameter, with a speed of 40 knots and an effective range of 10,000 yd. The range is still inferior to that of the gun, but it is greater than that of any searchlight; and defence from a night attack by a numerous flotilla of torpedo boats and submarines is problematic. The tactical remedy is the deployment of destroyers to beat off the flotilla. Submarines and destroyers thus become dangerous rivals or allies; and both are multiplied and enlarged from year to year. British "ocean-going destroyers" are built at the rate of 20 per annum; their tonnage now averages about 780, with increased fuel capacity and steaming radius. Submarines up to 800 tons displacement are now building in British yards. Germany and France have large flotillas of all sorts of torpedo craft; and these constitute a vital part of elaborate systems of coast defense.

Motive Power.—Foreign navies appear to have renounced the reciprocating engine, and battleships and cruisers, as well as destroyers, now rely upon turbines for their motive power. Oil fuel has been tested for all classes, and is constantly in use in destroyers. The adoption of internal-combustion engines is confidently predicted by naval experts; but no nation has a motor-driven battleship; and no recorded experiments would justify this transformation.

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THE WORLD'S NAVIES

The British parliamentary paper known as the Dilke Return, appeared as usual in May and presented the following summary of the navies of the principal powers, classified as ships built and ships building. From the former group are excluded all armored ships launched more than twenty years ago, except such as retain their armament and are not for sale. The ships building section contains no vessels whose construction is authorized unless their keels have actually been laid down.

RELATIVE ORDER OF WARSHIP TONNAGE

(March 1, 1911.)

At present.		As would be the case were vessels building now completed.	
Nation.	Tonnage.	Nation.	Tonnage.
Great Britain	1,841,762	Great Britain	2,278,642
United States	712,767	Germany	965,045
Germany	667,295	United States	849,501
France	552,656	France	726,411
Japan	433,091	Japan	522,571
Russia	305,713	Russia	401,463
Italy	219,959	Italy	328,289
Austria	153,938	Austria	209,899

SHIPS BUILT

	England.	France.	Russia.	Germany.	Italy.	Austria-Hungary.	United States.	Japan.
Battleships	53	17	7	32	9	11	29	15
Armored Coast Defense Vessels	..	7	2	4	..	..	9	..
Armored Cruisers	38	20	4	10	10	3	15	13
Protected Cruisers, I	18	5	7	..	..	..	3	2
Protected Cruisers, II	36	5	2	24	2	3	16	11
Protected Cruisers, III	16	7	2	11	11	3	..	6
Unprotected Cruisers	3	..	..	8	..	3	3	6
Scouts	8	..	..	..	..	..	3	..
Torpedo Vessels	25	2	4	1	5	11	2	4
Torpedo-Boat Destroyers	177	63	97	92	23	12	36	57
Torpedo Boats	110	191	44	80	82	73	28	57
Submarines	62	58	30	8	7	4	18	9

SHIPS BUILDING

Battleships	10	8	7	9	4	5	6	2
Armored Cruisers	5	1	2	3	..	..	..	1
Protected Cruisers, II	9	..	..	6	..	3	..	3
Unprotected Cruisers	3	..	..	..	..	..	..	..
Scouts	..	..	..	..	3	..	..	..
Submarine Depot Ship	1	..	..	..	..	..	..	..
Torpedo-Boat Destroyers	28	21	1	17	10	6	10	1
Torpedo Boats	..	..	..	..	30	..	..	..
Submarines	12	23	..	?	13	2	17	4

The return shows little change in the position of Great Britain relatively to the two-power standard. Last year the number of battleships built for Great Britain was 56, and for Germany and the United States together 63; this year the corresponding numbers are 53 and 61. Last year the figures stood, for Great Britain, 9 building against 12 for Germany and the United States. This year the figures are 10 to 15.

If the armored cruisers are added to the battleships, the figures make a better showing for England. But, included in the British armored cruisers are two now building for the Canadian navy. Commenting on the summary, the London *Times* says that "it seems somewhat optimistic to assume, as the Chancellor of the Exchequer recently did, that we have reached the climax in our naval expenditures."

XXII. AGRICULTURE, HORTICULTURE, AND FISHERIES

AGRICULTURE

E. W. Allen

AGRICULTURE IN THE THIRTEENTH CENSUS

The census returns for agriculture form one of the most interesting features of the year. The figures given out in September are preliminary, but the additions to be made will not materially modify the results.

Number of Farms.—The increase in the number of farms in the decade since the last census did not keep pace with the increase in population. The latter amounted to 21 per cent.; while the number of farms increased from 5,737,372 in 1900 to 6,340,357 in 1910, or a gain of 602,935 farms, equivalent to 10.5 per cent. This is the lowest rate of increase since the number of farms began to be recorded, in 1850. It is not compensated for by any growth in the size of farms, the average acreage per farm having decreased from 146 acres in 1900 to 138 in 1910.

Farm Areas.—The total area in farms is reported at 873,729,000 acres, as compared with 838,592,000 acres in 1900. This represents an increase in the total acreage devoted to agriculture of only 35,137,000 acres, or 4.2 per cent. The area of improved land, however, has increased more rapidly, amounting to 15.2 per cent. in 10 years, and totaling 477,448,000 acres. The percentage of improved land was 55 in 1910 as against 49 in 1900. This gain falls considerably short of the increase in population, which means that the number of acres in cultivation and used for producing crops has not kept pace with the increase in the number of people.

Value of Farm Property.—The value of farm property shows an enormous advance, farm land, exclusive of buildings, having doubled in value in the last 10 years. The total value is returned at $28,386,770,000, an increase of $15,328,762,000, or 117.4 per cent. The average value of farm land per acre increased from $15.57 in 1900 to $32.49 in 1910, a gain of 108.7 per cent. This is due, in part at least, to the advancing prices of agricultural products which have increased the income-producing power of the land. Added to this is the effect of a widespread land boom and inflated prices in some sections, which are to be regarded as speculative. In this connection the cost of improving what was previously unimproved land, amounting to nearly 63,000,000 acres, is a factor to be considered. There has also been a large gain in the value of buildings. These are valued in 1910 at $6,294,737,000, representing an increase in the decade of 77 per cent. Implements and machinery showed a corresponding advance, the total for 1910 amounting to $1,262,022,000, or 68.3 per cent. more than in 1900.

Rural Population.—Of the total number of farms, 85.5 per cent. were operated by white farmers and 14.5 per cent. by negro and other nonwhite people. There was an increase in the latter proportion of about one per cent.

Taking the country as a whole, the system of tenant farming showed a smaller increase than was expected. The proportion of farms operated by owners was 63.7 per cent. in 1900 and 62 per cent. in 1910; while the proportion operated by tenants was 35.3 per cent. in 1900 and 37.1 per cent. in 1910.

The expenditure for hired labor on

farms amounted to $645,612,000, representing an increase in 10 years of over 80 per cent. The expenditures for fertilizers were more than doubled, being $53,432,000 in 1900 and $114,277,000 in 1910.

The continued movement from the land to the towns and cities is forcibly brought out by the census returns. Taking a population of 2,500 as the dividing line between rural and urban communities, the figures show that 46.3 per cent. of the population of continental United States lived in urban territory in 1910, as compared with 40.5 per cent. in 1900, and 36.1 per cent. in 1890. The increase in urban population in the past ten years was 34.9 per cent., while in the rural population it was only 11.1 per cent. The percentage gain was, therefore, three times as great in the large towns and cities as in rural territory. Every state and territory showed an increase in the urban population, while in seven states there was an actual decrease in rural population. Such states as Ohio, Indiana, Illinois, Iowa, and Missouri are found in the latter list. In all but two states—Montana and Wyoming—the urban population increased faster than the rural. The largest increases in urban population since 1900 were in the Pacific, west-south-central, and mountain divisions, in the order named; and the largest percentage of increase in rural population in the decade occurred in the mountain, Pacific and west-south-central divisions respectively. The above figures for the rural population include, as stated, all persons living in towns or villages of less than 2,500. The actual decrease in population in the open country is not shown by the census. (See III, *Urban and Rural Population.*)

In connection with the problem of production in the cotton states, the report of the census on the movement of white and negro population is instructive. The belief is general in the South that the negroes are moving to the towns and cities far more readily than the whites, but the census figures show the opposite to be true. The rate of increase for the urban whites advanced from 27.6 per cent. in 1900 to 46.6 in 1910, or a difference of 19 per cent.; while the rate for the urban negroes advanced from 23.2 to 30.5, or a difference of 7.2 per cent. In many sections the number of farms operated by whites has materially decreased while the number of colored tenant farmers has shown a large increase; and this condition is not confined to regions adjacent to large industrial centers.

The value of wealth produced on farms is reported by the U. S. Department of Agriculture on estimates made by it and by the Census Bureau since 1879. In the latter year the amount was $2,213,000,000, which increased steadily by decades until it amounted to $8,926,000,000 in 1910.

The apparent balance of trade in favor of the United States on farm products was $366,644,580 at the close of the fiscal year, June 30, 1911, and $53,976,340 on forest products. The exports of farm products amounted to $1,030,893,751 as compared with $871,107,067 in 1910, and of forest products to $103,025,039. (See XXII, *Live Stock.*)

THE YEAR 1911

Climate.—The growing season of 1911 was one of unusual drought and heat over a considerable part of the United States. This seriously affected many crops and upset the expectations of the early part of the season. The unfavorable conditions were especially severe in the central and north-central states, while in the Gulf states and the Pacific Northwest the conditions were quite favorable up to the opening of fall. In much of the dry-farming region the drought was especially disastrous, because it followed two dry years in which there had been insufficient opportunity to store up moisture for a subsequent crop.

Crop Conditions.—On Sept. 1 the condition of all crops combined was approximately 15.2 per cent. below the average conditions for that date, whereas on Aug. 1 general conditions were about 14.6 per cent. below average, on July 1 about 10.7 per cent. below, and on June 1 about 2.8 per cent. below average conditions. The crop season, therefore, continued unfavorable as it progressed toward har-

vest. Taking into account both the acreage and the condition of crops, the indications as given out by the Bureau of Statistics on Sept. 9 were that the wheat crop would be 5 per cent. less than the average annual production for the past five years, corn about 3 per cent. less, oats 9.6 per cent. less, barley 14 per cent. less, potatoes 19 per cent. less, tobacco 21 per cent. less, and hay 26 per cent. less than the average for five years. (See XIII, *Business Conditions in 1911.*)

Prices of Farm Products.—The prices paid to farmers in the United States on Sept. 1, compared with Sept. 1, 1910, averaged 56 per cent. higher for potatoes, 34.6 per cent. higher for barley, 23.1 per cent. higher for hay, 5.2 per cent. higher for oats, 3.8 per cent. higher for rye, 0.6 per cent. lower for corn, 11.5 per cent. lower for wheat, 18.1 per cent. lower for cotton, 6.7 per cent. lower for chickens, 10.3 per cent. lower for eggs, and 8.3 per cent. lower for butter.

Canadian Reciprocity.—The proposed reciprocity legislation aroused widespread opposition from farmers and their organizations, especially along the border states. The agricultural press was divided upon this point, many leading editors minimizing the permanent danger to the farming interests and favoring a trial of the measure, while a large number saw in it the danger of reduced prices on agricultural products, owing to the competition of Canadian agriculture, without compensating advantages to the American farmer. Opposition to the measure did not cease with the passage of the act by Congress, and the failure of Canada to join the United States in this step was greeted with satisfaction by a large element of the farming interests in the North. (See IV, *Reciprocity;* and XIV, *Public Finance.*)

Tariff Board.—The Tariff Board appointed by President Taft prosecuted its studies actively during the year, giving much attention to the cost of agricultural production with a view to securing an intelligent basis for tariff adjustment. In the case of wool, for example, a field force was engaged under Alvin H. Sanders, a member of the board, in studying the general conditions of the wool industry from Texas to the far western states, an expert was sent to South America to investigate the conditions of wool production, and data was collected from other countries. The report of the commission has been received with great interest, for never in the history of the country has so broad a study been undertaken of the approximate cost of production and the conditions which favor or work against economical production, and the extent to which such conditions deserve to be recognized in the tariff adjustment.

National Soil Fertility League.—Quite in line with the above is the formation of a National Soil Fertility League, to promote the plan of furnishing personal advice and assistance to the farmers of every agricultural community, through a corps of capable men provided for that purpose. This league was organized during the past summer, and has established headquarters in Chicago. Its president is Howard N. Gross, and its advisory committee includes a list of men prominent in agriculture, finance, transportation, manufacturing, and education, headed by James J. Hill of St. Paul.

Alabama State Board of Agriculture.—A State Board of Agriculture was established in Alabama under the provisions of an act of the last legislature, granting an annual appropriation of $25,000 derived from the fertilizer tag tax, for use in farm demonstration work.

Silos.—The year witnessed great activity in silo building in the Mississippi Valley and the corn states of the Central West. This grows out of the attempt to economize labor by harvesting the corn and ears and ensiling them together, and the practice of using larger quantities of silage for growing and fattening cattle. While silage has been fed in small quantities for a long time, larger quantities, up to 30 or 40 lb. per head daily, are now being fed with satisfactory results. Wooden silos are being erected extensively, but concrete and brick silos have many advocates, and in Iowa the experiment

station has designed a silo built of hollow tile, which is proving economical, durable, and very efficient for storing silage, the air space preventing sudden changes in temperature. This silo is built of large blocks made from burnt clay, four inches in thickness, and is reinforced with rods laid between each course of blocks. In some cases a water tower is built on top of the silo. The clay block is much cheaper in that country than concrete block. (See XXII, *Live Stock.*)

Immigrants.—A report on "Recent Immigrants in Agriculture" has been issued in abstract form by the U. S. Immigration Commission. The report is prepared by Dr. Alexander E. Cance, of the Massachusetts Agricultural College. The object of this investigation was an inquiry into the extent, the racial character, and the economic, social, and political status of certain more or less recent immigrants in agriculture. Racially, the study included only those races coming from southern or eastern Europe and the Japanese. With a few exceptions every important rural settlement in the states east of the Mississippi River was visited and taken into consideration. A general survey is given of the races employed in agriculture and of the seasonal agricultural laborers, together with a general sociological survey of the immigrants in rural communities from whom information was secured. The report presents much of interest and value to the student of such subjects.

Farm Labor in California.—An important report on farm labor in California has been issued by the State Labor Commissioner, provided for by a special act of the legislature. The investigation covered over 4,000 farms. It was found that the average duration of employment in a given locality was less than two months in the year, and that only 16.6 per cent. of the whites and 10.7 per cent. of the Japanese were employed permanently. This accounts for the large extent of itinerant labor. The wages of Japanese laborers were practically equal to those paid to whites, but the consensus of opinion in all parts of the state was that white laborers of good character are preferable to any of the alien races, although the supply is not equal to the demand.

U. S. Department of Agriculture.—The aggregate appropriation made by Congress for the fiscal year 1911-12 is $16,900,016, an increase of nearly three and one-half million dollars over the previous year. This includes the $1,440,000 for the state experiment stations, which is administered through the Department, and an emergency item of $1,000,000 for fighting and preventing forest fires in the national forests, to be used in case it is needed. The latter is in addition to the regular appropriation of $150,000 for fire fighting under ordinary conditions, and supplements deficiency appropriations of over $900,000 incurred as a result of disastrous forest fires in the summer of 1910. (See XXII, *Forestry.*)

The total for the Forest Service, exclusive of the emergency appropriation, is $5,533,100, the largest amount assigned to any one bureau. To the permanent annual appropriation of $3,000,000 for the federal meat inspection, $155,000 is added. The fund for the eradication of the Texas fever cattle tick in the southern states is $250,000, that for the cotton boll-weevil campaign $350,000, and for the campaign against the gipsy and brown-tail moths in New England $284,840. Among new provisions are $87,000 for the enforcement of the Insecticide Act, which became effective January 1, 1911, and an appropriation for exploration and investigation to determine possible sources of potash, nitrates, and other natural fertilizers in the United States. (See XXII, *Agricultural Legislation.*)

Fertilizers.—The Government has already withdrawn from entry the following areas of public land containing phosphate deposits: Montana, 33,950 acres; Florida, 37,439 acres; Idaho, 1,101,517 acres; Utah, 107,745 acres; and Wyoming, 1,267,494 acres; a total of 2,548,145 acres. It was found that these phosphate beds located on public lands were passing into the hands of private owners, and that more than half the American production was going out

of the country. The greater part of the land withdrawn is in the far West, often near copper smelters, where great volumes of sulphuric-acid fumes escape which might be used for treating the raw phosphate. Special attention is now being given to the supply of potash in the United States, of which commodity large amounts for agricultural uses are imported from Germany.

Under the "Appalachian Forest Reserve" Act, the Department of Agriculture is authorized to expend $200,000 for fire protection, and $2,000,000 annually for the next four years for the examination and purchase of land to compose this reserve. (See XXII, *Forestry.*)

The Department's allotment for printing and binding publications, carried in another act, is $470,000 a year.

Experiment Stations.—In the fiscal year 1911, the Adams fund reached its full amount, $15,000 a year to each state and territory, and provision was made for it in the Agricultural Appropriation Act. The Adams Act for the further endowment of experiment stations, passed in 1906, providing an initial appropriation of $5,000 to each state and territory, which was to be increased $2,000 per year until the maximum of $15,000 was reached. Each state now receives $30,000 a year under the Hatch and Adams Acts for the work of its station.

The total revenues of the stations in 1910, the last year for which statistics are available, was $3,537,700, so that the federal appropriation was more than doubled by the states. Included in this amount are appropriations for buildings and additions to equipment, which aggregated $938,750 in value in that year. In eight states the revenues exceeded $100,000. The 1911 legislature in Ohio appropriated nearly $200,000 a year for the station for the next two years; the Illinois legislature appropriated $168,000 annually for special investigations on live stock, farm crops, soil, orcharding, floriculture and dairying, together with $39,000 for greenhouses and $20,000 for the purchase of additional land for a new poultry plant and field experiments; and the station budget in Indiana was about $190,000. Minnesota provided $117,600 for four substations, including two new ones; and North Dakota $25,000 for its five substations, and $24,000 for the 23 demonstration farms. In Texas a system of ten branch stations was located, under provision of the last legislature.

A sugar planters' experiment station has been established in Porto Rico through the agency of the Association of Sugar and Sugar Cane Producers of the island. It will be maintained by a tonnage tax on the product of the association members.

In addition to their other functions, the operation of plants for making hog-cholera serum has been assigned to several of the stations in the Central West, under separate state appropriations. In Missouri, for example, the appropriation for this service is $25,000, and in the first eight months of 1911 over 54,000 doses of serum were sent out. During the month of August alone, 15,000 hogs were vaccinated, and a force of four men were continued in the field in the most highly infected counties during the fall.

Field men of the Illinois station are doing a large amount of individual work with farmers, and are calling their attention, among other things, to the need of liming. These men have ordered for farmers about 20,000 tons of ground limestone, which is prepared at the state penitentiary. The low price at which this is sold has kept down the price of lime for agricultural purposes in that state.

Agricultural Extension Work.—Progress has been made in organizing this type of effort and in securing provision for it in state appropriations. It is still conducted in part by the experiment stations, and in part as a separate department of the university, with the coöperation of the college of agriculture and the station. The funds for this purpose are quite generous in several of the States. The 1911 legislature in New York set aside $50,000 for the purpose; the Minnesota legislature, $65,000; Kansas, $75,000 for the biennium; and Wisconsin, $40,000 a year.

As an illustration of the scope of this work, the report of Ohio State University for the ten months ending May 1, 1911, may be cited. In that period the extension department conducted 79 agricultural extension schools for men and 75 domestic-science schools for women, with an attendance of 17,000; ran 7 agricultural trains at which lectures were given to 16,000 people; made 125 orchard pruning and spraying demonstrations; prepared exhibits for 12 county fairs, the National Corn Show, and the State Apple Show; conducted 200 boys' corn contests and girls' sewing and baking contests, with a membership of about 12,000; furnished monthly plate copy to 148 county newspapers; and issued 30,000 copies monthly of the *Agricultural College Extension Bulletin*, six numbers of the *Farmers' Reading Course Bulletin*, and a like number of the *Homemakers' Reading Course Bulletin*, with supplements on corn, grain drills, poultry, dairying, drainage, pruning, spraying, and methods of teaching agriculture. In addition to coöperating with the university in this work, the state experiment station is itself conducting a vast campaign of extension and demonstration work, providing additional exhibits at fairs, which are shown in tents belonging to the station, and working out with farmers the labor cost of growing crops and of producing dairy products.

The extension department in Indiana has begun putting out plate matter for newspapers every three weeks through a large newspaper union, about 400 papers being supplied. The circulation of such material formerly had to be paid for to secure its use, but the change of attitude is indicated when the state papers are now willing to pay for news of the experiment station.

The Farmers' Coöperative Demonstration Work, conducted in the South, suffered a severe blow in the death of Dr. S. A. Knapp, the originator of this work, on April 1, 1911, at the age of 77. This work was organized in 1902 with a view to minimizing the ravages of the boll-weevil, by the demonstration of improved cultural methods and the introduction of diversification of crops. It has steadily increased in scope and popularity until in 1910 the Department of Agriculture was expending over $250,000 annually, which was supplemented by $113,000 from the General Education Board and $70,000 from state and individual sources. A force of about 500 men was employed. The work is continued under the direction of Dr. Knapp's son, Bradford Knapp.

A bequest of $100,000 to the town of Hardwick, Mass., to further agricultural, horticultural, and rural interests has recently become available from the estate of the late Calvin Paige, a former resident. This will be used largely in practical demonstration.

Farmers' institutes continued to form a prominent feature in the education of the farmer. In 41 states 5,582 institutes were held in 1910-11. While the majority were one-day meetings, about a third lasted two or three days. There was an aggregate attendance at these sessions of over three million persons. In addition to the regular institutes, special institutes were held, which are rapidly growing in interest and importance. For example, there were 149 movable schools at which regular courses of instruction were given, and 62 railroad instruction trains were run, covering nearly 36,000 miles and reaching a million persons.

In 14 states itinerant instructors and advisers were employed, there being 53 of these experts who gave all or a part of their time to the work. State appropriations for the institute work amounted to nearly $400,000.

Country Life Movement.—There has been no diminution in the propaganda conducted in the interest of country life and conditions. The continued demand for the report of the Commission on Country Life led to its being reprinted in large edition by the Spokane Chamber of Commerce, for use in country-life work in the Northwest; it has also been issued in book form, with an introduction by ex-President Roosevelt and an explanation by Prof. L. H. Bailey, the Chairman of the Commission. A book, *The Country Life*

Movement, by Prof. L. H. Bailey, has also been published, explaining the scope and meaning of the movement and its broad relationships.

A four-day Rural Life Conference was held in connection with the National Corn Exposition at Columbus, in February, 1911; and at the third National Conservation Congress, at Kansas City, September 25-27, the conservation of the soil and the betterment of the condition of country life were made the two paramount questions for consideration. The president of the Congress, Dr. Henry Wallace, gave special attention to these matters in his address, and the subject of soil fertility and its maintenance was discussed by such experts as Dr. C. G. Hopkins, of Illinois, Prof. F. B. Mumford of Missouri, and Prof. A. M. Ten Eyck of Kansas. The social and industrial side of agriculture also came in for large attention.

State meetings in the interest of country life were also held in Wisconsin, Vermont, and New Jersey; and a Country Church Conference was held at Ohio State University in July, at which lectures were given on farm crops, soil fertility, and horticulture, together with discussions on economic, sociological and religious topics. State country-life commissions, in addition to those already in existence, were organized in California and Montana. (See XXXVI, *Education*.)

Economics of Production and Distribution.—Efforts to enable the farmers and producers to secure a more reasonable share of the prices paid by consumers have continued. The farmers have shared in the higher prices of recent years, but a large part of the retail price still goes to the handlers and distributors, who do not manipulate or manufacture the product in any way, and take little or no risk as compared with that which the farmer bears from seed time to harvest. As a basis for a more intelligent understanding, reliable data have been collected on the difference between the prices of staple products on the farm and those paid by the ultimate consumer. The Department of Agriculture has taken part in this work, and was authorized by Congress to continue its investigations on the cost of food supplies at the farm and to the consumers. The Bureau of Statistics of that Department has collected and published during the year data from five to six thousand farmers, distributed over the country, as to the cost of producing three of the staple crops—corn, wheat, and oats. The figures given are for 1909 and are estimates. The cost in the case of corn varied from about $0.20 per bus. in the Mississippi Valley to $0.439 in the South Atlantic states, exclusive of rent; or $0.31 and $0.56, respectively, including rent of land. For the whole country the average was $0.263 per bus., exclusive of rent, and $0.379, including rent. The farm value per bus. was $0.62.

For wheat, the production cost, exclusive of rent, ranged from $0.36 in the far western states, to $0.66 in the south Atlantic states, and averaged $0.46 for the whole country; while, making allowance for rent of land, it varied from $0.52 to $0.82, and averaged $0.66 per bus. The average farm value per bus. was $0.96.

In the case of oats the cost per bus., exclusive of rent, ranged from $0.18, in the Mississippi Valley, to $0.33, in the south Atlantic states, averaging for the whole country $0.20; while taking account of the rent of land, the cost ranged from $0.29 in the Mississippi Valley and far western states to $0.44 in the south Atlantic states, the average for the whole country being $0.31. The average farm value was $0.40 per bushel.

The agricultural press has conducted similar studies, one organ maintaining that as a general rule the farmer realizes only 35 cents of the consumer's dollar for his products. Coöperation and direct selling are urged as the remedy, and while there is some progress in that direction, the result is not yet far-reaching. The rank and file of producers are unorganized and without assistance, and must depend upon commission merchants and middlemen.

A delegation of Pennsylvania farmers, headed by Patrick Eagan, former Minister to Chile, and representing

62,500 tillers of the soil, waited upon Mayor Gaynor of New York and advocated handling the products of the soil directly from the farmer to the consumer. The object of the delegation was to work out a coöperative scheme whereby this might be accomplished. It was shown that the potatoes for which consumers last year paid $60,000,000 netted the farmers less than $8,500,000; cabbage which sold in New York for $9,125,000 brought the farmers $1,800,000; and milk for which consumers paid over $48,000,000 returned the farmer $28,000,000. (See *infra, Live Stock,* and *Horticulture.*)

Farming Profits.—The Department of Agriculture published during the year the results of an agricultural survey of four townships in southern New Hampshire, the information being gained by a personal visit to each farmer within a certain area, different types of farming being represented. It was found that the average farmer in these four townships "receives $1.07 per day, his house rent, and what the family produces toward his own living." The average profit on the investment was 5.7 per cent.; 40 poultry farms gave 9.4 per cent., and 9 fruit farms returned 23 per cent., but nearly one-third of the farmers "received less than 5 per cent. on the capital invested, to say nothing for additional pay for their own time and labor."

Cotton.—A bale of cotton grown in the extreme southern part of Texas was marketed on June 12, the earliest hitherto received at that point by 11 days. The bale weighed 493 pounds and sold for $1,015. There are reported to be large possibilities for cotton production in the dryer parts of the western and southwestern states, where the boll weevil can do little damage. Experiments in Texas, Kansas, Arizona, and California indicate that cotton of excellent quality can be produced in many regions where none has been grown in the past. Cotton yields a marketable product with less water than any other crop now grown in the Southwest, and a small amount of irrigation can be used more effectively with cotton than with any other crop. The year 1910 was the first for which statistics have been given for California, where the industry is new, being confined mainly to the Imperial Valley. The state grew about 10,000 acres, which averaged 335 pounds an acre, or about 6,700 bales. Experiments near Yuma, Ariz., have shown that Egyptian cotton gives large yields, and the lint is pronounced by American spinners equal to corresponding grades of the imported product, of which about $12,000,000 worth is brought into this country annually.

Much interest has been aroused by cotton experiments in Hawaii, and the growing of this crop on a commercial scale seems assured. The crop requires less water than sugar cane, and already over 500 acres have been planted on sugar plantations where irrigation water was deficient. Sea Island and Caravonica varieties are used chiefly. The plant grows as a perennial in that country, living over from season to season. By pruning, the time of picking can be regulated so as to fit in with the labor supply. The prunings may be used as cuttings for starting new stock, as they root and develop rapidly. It has also been found practical to bud or graft cotton plants, thus propagating desirable individuals.

Wool.—The wool clip of 1911 will naturally be lower than in recent years, as western flocks were depleted by the hard winter of 1909-10. The spring clip, owing to a mild winter, was in good condition. A recent development of the industry has been the warehouse idea, which aims to furnish the grower with storage facilities for carrying his wool until a satisfactory market can be secured. Another development is the scouring mill, which affords the grower an opportunity to have his product scoured and sold to the manufacturer on its merits. Several of the experiment stations, notably in Wyoming and Montana, are conducting quite extensive investigations upon the effect of feed, environment, and other conditions on wool. The Ohio Experiment Station has also recently started work in that line and will conduct one of its district farms as a wool farm. The station is installing a wool plant and will make

various experiments in wool production.

Farm Machinery.—The increasing use of farm machinery of various kinds, in order to give greater efficiency and return for the labor of the individual, is one of the distinct signs of the times. As mentioned above, the last census figures show a value for the implements and machinery on farms of $1,262,022,000, an increase of 68.3 per cent. during the last decade. The present magnitude of the industry is shown by the report of the International Harvester Company, one of the largest manufacturers. The total sales of farm machinery and allied products during 1910 aggregated $101,106,358, an increase of 16 per cent. over the sales of 1909. More than one-third of this product is marketed in foreign countries.

This replacement of the simple and inexpensive implements of the fathers by more efficient and complicated machines, and particularly the substitution during the past decade of motors for horses and mules and for power generally, has created a widespread demand for instruction in agricultural machinery, which is being met to considerable extent by the rural engineering departments of the agricultural colleges. Attention to this subject is not confined to the long courses, but prominence is given to its practical aspects in the various short courses and in special courses for adult farmers. At least one institution in the Northwest has a short course in traction engineering, and many of the colleges maintain exhibits of agricultural machinery and of parts.

The perfection of a machine for picking cotton, to do away with the tedious and expensive hand labor in gathering the bolls, has received much attention, but without success, until recently. A machine is said to have been devised, operated by gasoline, which does its work thoroughly and does not injure the unopened bolls.

Exhibitions and Congresses.—The remarkable development of agricultural fairs and expositions of farm life and interests during the past decade affords no parallel in agricultural history. County, state, and national fairs and expositions are growing in extent and in importance every year. The National Corn Exposition at Columbus, Ohio, February 11, 1911, was a distinctly national event, exhibits being shown from 35 states, with extensive additional exhibits from the United States Department of Agriculture and from 25 experiment stations. The Land Show in Chicago, in November, 1910, attracted large crowds of people interested in the land, and afforded opportunity for advertising land in both new and old sections of the country. Its success and the widespread interest in the subject led to the planning of the American Land and Irrigation Exposition, held at Madison Square Garden, New York, November 3-12, 1911. The prime object of the exposition was to bring to the attention of all classes of people in the eastern part of the United States the vast agricultural possibilities of America. The state legislature made an appropriation of $10,000 to enable the Board of Agriculture to prepare a suitable exhibit of agricultural and horticultural products of the state.

The fifth Dry Farming Congress met in October, 1910, at Spokane, Wash., over 1,200 delegates being present from this country, Canada, and abroad. The Congress of 1911 was held at Colorado Springs, October 16-20, 1911, under the presidency of J. H. Worst, President of the North Dakota Agricultural College. A congress of farm women, the first of its kind in this country, was held in connection with it. The National Wool Growers' Association met at Portland, Ore., early in January, 1911. Objection was voiced by resolution to any tariff changes until the Tariff Board had reported on the cost of wool production, and the association favored a permanent commission of that kind. (See *infra*, *Dairying*.)

Necrology.—Dr. Edward Burnett Voorhees, director of the agricultural experiment stations in New Jersey and at the head of agricultural instruction in Rutgers College, died June 6, 1911, at the age of 55 years. He was one of the leading spirits in experiment-station work in the United States, and an indefatigable worker for the farming interests of

New Jersey, on which he exerted a great influence. He was the author of the standard American text-book *Fertilizers*, and of *First Principles of Agriculture*.

Dr. Franklin Hiram King, widely known for his researches in soil physics and as the inventor of the King system of ventilation, died at Madison, Wis., Aug. 4, at the age of 63 years. Prof. King was appointed to the chair of agricultural physics at the University of Wisconsin in 1888, where in the ensuing 13 years most of his best known work was done. He served for a time in charge of the Division of Soil Management in the Bureau of Soils, U. S. Department of Agriculture, and of late had spent his time largely in expert and editorial work. His most conspicuous books are *The Soil, Principles of Agricultural Irrigation and Farm Drainage, The Physics of Agriculture*, and *Ventilation for Dwellings, Rural Schools, and Stables*.

Dr. Paul Schweitzer, Professor of Agricultural Chemistry in the University of Missouri and chemist to the experiment station until 1906, when he retired as *emeritus*, died July 30, at the age of 71.

DAIRYING

E. W. Morse

Cost and Prices of Dairy Products.—The year 1911 was not a very encouraging one from the standpoint of the milk producer, because in addition to the high cost of feeds a drought in the early part of the summer extended over a large section of the country, which reduced the feed in the pastures and materially increased the cost of production. The danger of using unsanitary milk has also required the health authorities to be more exacting with the producer in handling milk. The cost of producing milk has averaged high, but the retail price of milk has not increased proportionately, although in the Elgin district a higher price has been recorded for butter than was obtained since 1882. The output of butter exceeded that of two years ago by about 6,000,000 pounds, the total value being $2,000,000. The price for the year was a little under 30 cents per pound.

Pure Milk Supply.—Public interest in the importance of the pure-milk supply has continued to increase, when judged either by the number and scope of public exhibitions of dairy products or by legislative acts concerning the production, transportation, and sale of milk and its products. The city of Geneva, N. Y., has furnished an example of how the milk supply of a small city can be improved by publicity in paying for milk on the basis of quality of the product. By the coöperation of the New York State Experiment Station and the health authorities of Geneva, the percentage of dairies rated "good" was raised in three years from 5 to 74.4 good, and 12.18 per cent. are rated as excellent.

Pasteurizing.—The pasteurization of milk has become quite common, and experiments have shown that reinfection of milk, which often occurs, can be prevented by pasteurizing after bottling by using water-tight seals and pasteurizing either in a submerging or shower-bath pasteurizer such as is used in breweries.

Dairy Legislation.—The misuse of the Babcock test has led to the enactment of a law in several of the states which requires test operators to obtain licenses. The Commissioner of Internal Revenue, following the decisions of the Federal Courts, has ruled that on and after May 1, 1911, the incorporation of more than 16 per cent. of water in butter is not an accident and such butter shall be considered to be adulterated. An important, and unexpected, decision of the full bench of the Massachusetts Supreme Court was to the effect that a milk dealer who takes standard milk, concentrates and brings it from another state, may add water and sell the resulting product as milk.

Cheese from Buttermilk.—An improved method has been devised at the Wisconsin Experiment Station for making a cheese from buttermilk, which has about the same food value pound for pound as lean beefsteak which sells for twice the price. The cheese can be shipped in butter tubs and retailed in small packages.

It can be kept for 10 days at a temperature of 50 to 60 degrees F., or for longer periods if stored at or below the freezing point. (See XXVIII, *Agricultural Chemistry.*)

Dairy Shows.—One of the most unique and important milk shows was held in May at Philadelphia. It was organized under the auspices of the Board of Health, the Milk Commission of the Philadelphia Pediatric Society, the veterinary department of the University of Pennsylvania, and the Bureau of Municipal Research, and was aided by other organizations. There were exhibitions of milk, together with picture shows and demonstrations where thousands of visitors and school children in processions were shown how milk should be cared for in the home. There were 26 meetings of producers, middlemen, scientists, and legislators to discuss milk production, its relation to disease, care of milk, its use in cooking, milk inspection, and other problems connected with the milk industry and its vital interest to the welfare of the community.

The scope of the National Dairy Show held at Chicago Oct. 26 to Nov. 4 was much increased over that of previous years. Besides a great assemblage of dairy cattle and display of dairy products, there were working demonstrations of the preparation of pure-food and dairy products. The intercollegiate student judging contest also added greatly to its educational value. In connection with the show, meetings were held of a number of cattle clubs and national dairy associations. This year, for the first time, there was a great convention of dairymen and breeders of dairy cattle, known as the American Dairy Cattle Congress. From Oct. 10 to 18 there was held at Milwaukee the first International Dairy Show, its object being to provide a meeting place for the dairy interests of all countries. Premiums were offered for international exhibits of all kinds that show evidence of progress in dairying. A special feature was an exhibit of market milk and cream.

Milk Records.—Several phenomenal dairy records were completed during the year. A Holstein cow, Pietertje Maid Ormsby, made in seven days 35.56 lb. of butter, and in 30 days 145.66 lb. Another Holstein cow, Pontiac Pet, made 37.67 lb. of butter in seven days. Dolly Dimple, a Guernsey, completed a third phenomenal milk record and is the world's champion for three consecutive milking periods. Her average yield of milk for three lactation periods was 17,092.14 lb.

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LIVE STOCK

E. W. MORSE

Census Returns.—The preliminary returns of the Thirteenth Census on statistics of live stock and poultry show large increases since 1900. For many of the states the total value of the increase ranges from 40 to 80 per cent. In many northern and western states the increase in poultry values is much higher than these figures, even amounting to over 200 per cent. in a few states; and in New Mexico the gain in value of poultry since 1900 was 311 per cent. In the southern states (Texas and Florida excepted) mules and asses had a greater value than other kinds of stock, while in most northern and western states the highest values were in horses and colts. Notable exceptions to this were New York and Massachusetts in the east, and most of the Rocky Mountain states in the west, where the total value of cattle exceeded that of horses. In Wyoming the total value of the sheep exceeded that of any other kind of stock. The large increase in the value of horses, colts, mules and asses is due as much to the increase in value per head as to the increase in numbers.

Feeding.—The rise in feed values and the cutting up of the western ranges in recent years has brought

about a great change in the methods of feeding and the character of feeds used. Whereas formerly young stock was raised on the range and sent to the Central States to be finished on corn, as the pastures have become restricted in area a new method of feeding was found to be necessary, and experiments have shown that a combination of corn and alfalfa is a most economical ration for the larger animals throughout the corn belt where land is high and these crops can be successfully grown. Silage has proved to be the best method by which to utilize the corn plant, recent experiments having shown that silage is an economical feed for horses, sheep, and even swine when fed in moderate amounts, and that cattle when fed silage may be fattened at about two-thirds of the usual cost of producing beef. It is estimated that in the state of Iowa alone over 3,000 silos were built in 1911. (See *supra, The Year 1911,* and XXVIII, *Agricultural Chemistry.*)

Breeding.—Early in the year the National Society of Record Associations was organized, the membership of which is composed of live-stock pedigree associations in the United States. This movement, representing as it does more than 100,000 active breeders of pure-bred animals, is considered by well-informed stockmen as one of the most important movements ever inaugurated for the advancement of pure-bred live stock. Another progressive movement was the formation of the Pure-Bred Sire League, a voluntary organization to encourage the use of pure-bred sires for breeding all kinds of farm animals, and to discourage the use of grade, scrub, or unsound sires. The U. S. Department of Agriculture has issued new regulations regarding the importations of animals for breeding purposes in order to prevent fraud concerning the ancestry of pure-bred stock. (See *supra, Dairying.*)

Horses.—State as well as federal authorities have taken action to encourage the breeding of better stock. This is particularly true in regard to horse breeding, several states having passed so-called stallion laws which relate to the registration and control of all stallions used for public service. (See *infra, Agricultural Legislation.*)

The Department of Agriculture has continued the coöperative work in horse breeding at several of the experiment stations, and in connection with the War Department will breed horses for market has become a large States Army. The fattening of horses for market has become a large industry in the corn-growing States. The farmers buy the western stock, feed it for a few months to bring it into better condition, and then sell for the eastern market at an increased price, which leaves a good profit. The extent of the horse-breeding industry is shown by the fact that in the state of Illinois alone there are about 1,500,000 horses, nearly as many as there are in Great Britain. The total number of horses in the United States is now about 22,000,000.

Cattle.—For two years the United States has imported more cattle in numbers than were exported, but aside from a small number of breeding animals most of the imports were cheap stockers from Mexico, so that the loss was numerical only. A Producers' and Consumers' Congress was held at Fort Worth, Texas, and a permanent organization formed for the purpose of holding a nation-wide meeting during 1911, and urging the construction of independent packing houses and municipal abattoirs. Another movement that may result in bringing the producer and consumer of meat closer together was the organization of a state selling agency by the Texas Cattle Raisers Association, with a paid up capital of $3,000,000, the object being to obtain better and more uniform prices for the grower and lower meat prices for the consumer.

Sheep.—In 1911 there was a heavy liquidation of sheep from the western ranges, and prices for mutton have been somewhat lower than normal. Owing to uncertainties in regard to tariff legislation the wool industry has been in more or less unsettled condition. The census statistics show that the sheep industry has remained essentially unchanged for the past ten years.

Swine.—Values for swine as a rule are higher than for sheep, which can be accounted for by the fact that during the high prices in the winter of 1909-10 many brood sows went to the packers and the general shortage of breeding stock has not been replaced. The loss from diseases of hogs during the past year (43.5 per 1,000) in the United States was the smallest ever recorded by the Bureau of Statistics, due largely to the control of outbreaks of hog cholera, which have decreased gradually from year to year.

Poultry.—The products of the American hen amount to a total value of $620,000,000 per year, but a great loss results from poor handling of eggs. In order to prevent this loss the question has been studied by the Bureau of Animal Industry, and it was thought that the problem could be solved by the organization of egg buyers. This was tried in Kansas with the coöperation of the state authorities, for the purpose of compelling the traders in eggs to buy on the quality basis only. This has resulted in a great improvement in the quality of eggs, and the best evidence of its success is evidenced by the fact that the movement has now spread to other states.

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DISEASES OF LIVE STOCK

W. A. HOOKER

American Veterinary Medical Association.—The annual meeting of the American Veterinary Medical Association was held at the University of Toronto, Toronto, Can., from August 22 to 25, 1911; the officers elected for the ensuing year are: president, Dr. S. Brenton, of Detroit; secretary, Dr. C. J. Marshall, of Philadelphia; treasurer, Dr. G. R. White, of Nashville. Dr. F. Hobday, the noted English surgeon, was present and lectured on the roaring operation.

Education.—At the annual meeting of the Association, it was recommended that the veterinary schools coöperate in conferring the D. V. M. degree in place of the other veterinary degrees that have been given. Seventeen veterinary colleges in the United States and Canada have met the educational requirements governing entrance to the veterinary-inspector examination of the Bureau of Animal Industry.

Tuberculosis.—A noteworthy demonstration of the apparent possibility of eradicating cattle tuberculosis was carried on in the District of Columbia under the direction of the Bureau of Animal Industry. The final report of the British Royal Commission appointed to inquire into the relation of human and animal tuberculosis was presented to both houses of Parliament. The commission found that among young children dying from primary abdominal tuberculosis the fatal lesions could in nearly one-half of the cases be referred to the bovine bacillus and to that type alone. The experiments reported are believed to remove all doubt and establish without question the fact that the contention of Robert Koch that humans could not contract tuberculosis from animals was based upon insufficient evidence.

Anthrax or Charbon.—A method of vaccination that gives an immunity to this particularly destructive disease of sheep and cattle was developed by Pasteur in 1892. As this method requires two injections and about a month for the immunity to become established, in case of an outbreak among stock there is sufficient time during the interval for an animal to take the disease and die therefrom. During the year, Dr. C. F. Dawson, of the Delaware Experiment Station, prepared a serum which confers an immediate passive immunity, and also a single vaccine that

can be substituted for Pasteur's double vaccine, thus cutting the time required for immunization down to 15 days.

Glanders.—During the course of an outbreak of glanders in a large livery stable in Washington, D. C., the Bureau of Animal Industry made use of the diagnostic agent known as complement fixation, and found the test to be highly reliable.

Lip and Leg Ulceration in Sheep.—This contagious disease of sheep (Necrobacillosis), which formerly existed in portions of Wyoming, has been practically eradicated, now existing to a slight extent only in four counties. The quarantine placed by the Secretary of Agriculture upon certain areas on July 22, 1910, was removed August 10, 1911.

Foot and Mouth Disease.—An embargo was placed upon importations of cattle from Great Britain due to the fact that the English authorities were unable to determine the source of an outbreak of foot-and-mouth disease occurring in that country. The disease also raged for several months in certain Departments of France.

Malta Fever.—This disease of goats and sheep, due to *Micrococcus melitensis,* and conveyed to man principally through the drinking of milk from infected goats, was reported by Dr. T. L. Ferenbaugh to have been discovered among goats of the Pecos Valley in the vicinity of Del Rio, Texas. Investigations have shown it to be endemic throughout the older goat-raising sections of Texas.

Fowl Cholera.—Dr. P. B. Hadley and Elizabeth E. Amison, of the Rhode Island Experiment Station, have conducted a biological study of eleven pathogenic organisms from cholera and like diseases of poultry, and find that while the genuine fowl cholera is endemic in the New England States and probably through the Middle States, and is increasing in prevalence, similar diseases exist in which the cholera organism is absent.

Texas Fever.—The work of eradicating the cattle tick which conveys this disease from animal to animal resulted in the release from quarantine of 18,700 sq. miles during the year. Prior to the present calendar year 128,856 sq. miles had been freed from infection and released. The quarantined area in California, originally 69,755 sq. miles, had been reduced at the beginning of the year to only 9,315 sq. miles, a large percentage of which is now tick-free and will soon be released. Of the original 153,476 cattle infested, there remain under local quarantine only 41,906. In order to prevent the introduction of ticky cattle from Mexico, a wire fence has been erected for about fifty miles along the international line in California. An embargo was placed upon Mexican cattle on March 16, 1911, in order to prevent the introduction of tick-infested stock.

Dourine and Murrina.—An outbreak of dourine, a disease of horses due to a protozoan organism known as *Trypanosoma equiperdum,* was discovered in Taylor County, Iowa, in May. Murrina, also a horse disease, was studied by S. T. Darling, in Panama and found to be due to a new trypanosome, which was described as *Trypanosoma hippicum.*

Surra.—In the annual report of the Bureau of Animal Industry, Drs. Mohler and Thompson give an account of the way in which this disease in Brahman cattle, imported from India, was dealt with. Of 41 animals imported from India, it was found necessary to slaughter and destroy 18.

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DISEASES OF PLANTS

WALTER H. EVANS

Plant pathologists at home and abroad added much to our knowledge of plant diseases during the year 1911, through the discovery of new diseases, additional facts regarding some that have long been known, and means for their prevention or control. The plant disease survey of the country continues to be carried on jointly between the U. S. Department of Agriculture and the agricultural experiment stations in the different states. A new office for the special study of the diseases of forest trees and means for their control was established in the U. S. Department of Agriculture. A new journal, *Phytopathology*, the official organ of the American Phytopathological Society, made its appearance early in the year.

The California Vine Disease, which has baffled pathologists for many years, Butler now claims is due to some weakness of the grapevines caused by disturbance of the functions of absorption and conduction of the water supply.

Arsenical Sprays.—Somewhat of a controversy has arisen, especially in the Western States, over the ultimate effect of spraying apple and other trees with fungicides and insecticides containing arsenic. During the past year Swingle and Morris have reported and described evident arsenical injury to apple and other trees. Where the arsenicals were applied in large quantities or permitted to accumulate, serious injury was observed in Montana. A new fruit spot of stored apples characterized by small sunken brown spots is described by Scott, who attributes it to arsenate of lead used as a spray during the growing season.

In Europe the dying of large areas of planted pines 30 to 40 years old is reported. Tubeuf investigated the matter and was unable to find any fungus or other organism present, and he believes the trouble is due to unfavorable soil conditions. Only a few of the diseases due to fungi and bacteria can be noted from a large list.

The smuts and rusts of grains are receiving the attention of many investigators here and abroad. Many rusts are known to spend alternate stages in their life cycle on different host plants, and Arthur, Klebahn, Fraser, and others have extended the list of known species and their hosts very materially during the past year. Olive has reported upon the origin of this phenomenon in a recent publication. Pritchard has contributed two papers on the cereal rust problem in which he shows that wheat rust can winter over and infect the subsequent

crop through the seed. He reports having found the mycelium and pustules containing spores in diseased seed. This discovery differs materially from the mycoplasma theory of Eriksson relating to the propagation of cereal rusts.

Crown Galls.—In a recent publication Dr. Erwin Smith gives the results of six years' study of the crown galls of plants. He has found the disease to be a very common one in nurseries and elsewhere, the roots and stems of a large number of plants being affected by it. The disease is found due to bacteria, and the organism (*Bacterium tumefaciens*) has been isolated, grown in pure cultures, and the tumors formed on new plants when introduced by inoculation. The bacteria do not produce cavities in the host plant, as is the case in many other diseases, but their presence results in a rapid proliferation of the soft and growing tissues. An analogy appears to exist between the growth of the plant tissues and similar growths, especially in sarcoma or cancer in animals.

Chestnut Bark Disease.—A serious disease of chestnut trees threatens the destruction of these trees in the eastern part of the United States. The cause of this disease seems to be the fungus *Diaporthe parasitica*, although Clinton thinks severe drought and cold winters have weakened the trees and brought about conditions which render the parasitism of the fungus possible. The trouble is called the chestnut bark disease, and it seems to infect all varieties of chestnuts, ultimately killing the trees. So serious has this disease become that Congress appropriated $5,000 and the state of Pennsylvania $275,000 for its study and control.

White Pine Blister Blight.—Spaulding has given an account of the introduction of the white pine blister blight of Europe into ten or a dozen states of this country through the importation of pine seedlings for forest planting. It is believed that all the diseased material has been traced and destroyed.

Cotton Anthracnose.—An important disease in the Southern States is the cotton anthracnose, which has been studied by pathologists for a long time. Barre, Edgerton, Lewis, and others have shown that the fungus (*Colletotrichum gossypii*) can be carried by the seed, and that planting clean seed on clean land will reduce the amount of disease. Barre claims that short rotations and the use of clean seed will eliminate the disease from the cotton fields.

Panama Disease.—The banana crop in Central and South America is threatened by a disease to which the name Panama disease is given. Opinions differ as to its cause, some investigators attributing it to bacteria, while others are equally certain that it is caused by fungi.

Gummosis.—A short time ago the cause of a common disease of citrus trees called gummosis was determined in South Africa as *Diplodia natalensis*. Recently Butler, Fawcett, and others have identified the fungus with the disease in this country and have also found that the same organism causes a gum flow on peaches, plums, etc. Johnson claims that the serious bud rot of cocoanuts is due to *Bacillus coli* (a common water-borne organism) or a form that can not be differentiated from it by present methods of study.

Fungi.—Bolley has advanced a theory to explain the falling off of yields of grain in the Northwest where there is apparently no decrease in soil fertility. He holds that it is due to the soil becoming infected with several species of fungi which attack the grain plant, injuring it to a greater or less extent.

Foreign.—The black wart and leaf roll diseases of potatoes continue serious pests in Europe, and no entirely successful methods of control have been worked out for them. The blackleg disease of potatoes is also serious and it has recently been reported in this country. A new disease of asparagus is reported in Italy. Studies of economic plants in the tropics are revealing a large number of diseases of great destructiveness.

Fungicides.—For the control of plant diseases spraying with some solution that will destroy the spores or prevent their growth is generally recommended. For many years Bordeaux mixture was considered the

best fungicide to use, but it has long been known to cause injury to peach trees and under certain conditions to apple leaves and fruit. Substitutes for this mixture are being sought by plant pathologists everywhere, and lime-sulphur mixtures have been found valuable in controlling some diseases, especially those of the peach, and for apple scab, blotch, and others. For grape black rot, apple bitter rot, and as a spray for potatoes to protect against blight, Bordeaux mixture still continues to be the best fungicide for general uses. (See *infra, Horticulture.*)

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ECONOMIC ENTOMOLOGY

W. A. HOOKER

Appointments.—The year witnessed a number of changes in personnel and the establishment of several new departments. In June, Prof. C. H. Fernald, one of the pioneer economic entomologists, who for the last 24 years has occupied the chair of Entomology at the Massachusetts Agricultural College and served as entomologist to the Massachusetts Experiment Station, and who was for many years previous connected with the Maine Agricultural College, retired from active duties, and was succeeded by Dr. H. T. Fernald. The new entomological building, erected and equipped at an expense of $100,000, which was dedicated several months prior to Prof. Fernald's retirement, stands as a monument to his service to the state.

At the close of 1910, Dr. Henry Skinner resigned the position which he had held for more than 21 years as editor of the *Entomological News*, and the associate editor, Dr. Philip P. Calvert, was chosen as his successor, with E. T. Cresson, Jr., as the new associate editor. D. L. Van Dine was appointed Entomologist of the experiment station conducted in Porto Rico by the Sugar Producers' Association, and Dr. C. W. Hooker, of the Federal Bureau of Entomology was appointed entomologist of the Federal Agricultural Experiment Station in Porto Rico. A. A. Girault, Assistant Entomologist at the University of Illinois, was appointed Entomologist of Queensland; Prof. Robert Newstead was elected to the newly established Dutton Memorial Chair of Entomology at the University of Liverpool; D. Van Hove was made Entomologist of Belgium, and C. P. Lounsbury became chief of the newly formed Division of Entomology of the South African Union.

Necrology.—Dr. Samuel H. Scudder, author of the monumental three-volume work on *The Butterflies of the Eastern United States and Canada*, of *Nomenclator Zoologicus*, and well-known for his classic works on the *Lepidoptera*, *Orthoptera*, and fossil insects, died May 17, at the age of 74 years. D. W. Coquillett, the discoverer of the value of hydrocyanic acid gas as an insecticide, and for many years dipterologist of the United States National Museum, died July 8 at the age of 54. F. C. Pratt, for many years an assistant entomologist with the federal Bureau of Entomology, died on May 27, at the age of 42. Prof. J. W. Tutt, English lepidopterist and editor of the *Entomological Record* and *Journal of Variation* (London) from 1890 to 1910, died Jan. 10, at the age of 53. Sir Rupert Boyce, author of *Mosquito or Man? The Conquest of the Tropical World*, and noted for his activity in furthering prophylactic measures in combating insect-conveyed and other tropical diseases, died June 16, at the age of 49.

Gipsy and Brown-Tail Moths.—These pests continue to spread into new territory, more especially toward the north and northeast. During the summer a colony of gipsy moths was discovered in Berkshire Co., Mass., not far from the New York line. The introduction, breeding, and liberation of insect enemies of these two moths

was continued under the direction of Dr. L. O. Howard, Chief of the Federal Bureau of Entomology, who with the assistance of W. F. Fiske, published a detailed report of this work.

Cotton Boll Weevil.—The Mexican cotton boll weevil, which first entered this country in the vicinity of Brownsville, Texas, about 1892, has continued its dispersion into new territory at the average rate of about 50 miles per annum, until during 1911 it nearly reached the limit of the cotton belt in Oklahoma and spread well into Alabama on the east. Owing to several dry seasons it was less injurious in 1911 than in some previous years.

Cotton Square Weevil.—The Peruvian Government Entomologist reported that an affection of cotton in that country, which has been known for many years as the "hielo," is due to a weevil that is very similar in its habits to the cotton boll weevil.

Cotton Leaf Worm.—The cotton leaf worm was unusually abundant. During the late summer and early fall a remarkable dispersion took place, great numbers of the moths appearing at Washington, D. C., and several being captured as far north as Massachusetts.

The Alfalfa Leaf Weevil.—This European pest, accidently introduced into the United States, where it was first discovered in Utah in 1904, continues to spread and threatens eventually to reach all alfalfa-growing regions. An appropriation of $15,000 with which to combat the pest was made by Congress, and work was carried on with its natural enemies, especially with a parasitic mite.

The Codling Moth.—Life-history studies of the pest that is responsible for the greater part of our wormy apples and pears, conducted in Ontario, Pennsylvania, and California, were reported during the year and make possible a more intelligent combating of the insect.

Pear Thrips.—The pear thrips is a native of California which first came to notice several years ago. It has since been the source of serious injury in the region around San Francisco Bay through attacking the blossoms of deciduous fruits, especially the pear. Although since reported to occur and to be the source of injury to pears in England, it has not been discovered in this country outside of California until 1911, when it was found injuring pears in New York State.

Sugar Cane Borer.—The sugar-cane borer, which is the larva of a moth known as *Diatræa saccharalis*, is probably the worst insect pest of sugar cane. Investigations reported during the year show that its attack causes a loss of 4 per cent. in the yield of cane, and that there may be a lowering of the sugar content of the juice to the extent of nearly 40 per cent.

House Fly.—Campaigns against the typhoid or house fly, stimulated by newspaper rewards, were conducted in a number of cities, including Washington, D. C., Worcester, Mass., and Indianapolis, Ind. A book on the pest, by Dr. L. O. Howard, was published during the year. It was found by Dr. C. W. Stiles that when fly-blown fecal material was buried under 48 in. of clean (unsterilized) sand, house flies issued from the surface; also that when buried under 72 in. of clean (unsterilized) sand, flies of an undetermined genus and species issued.

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THE SEVENTEEN YEAR LOCUST

E. P. FELT

The appearance of a large brood of the seventeen-year locust, or periodical Cicada, during the Summer of 1911, aroused great popular interest in this insect, remarkable because of its long life cycle spent mostly under ground. This is one of the best known broods, since it occurs in a thickly settled region. The early individuals appeared in New York on May 20, seventeen years to a day

from the time the advance guard left the ground in 1894. The peculiar above-ground chambers, or Cicada cones, first observed abundantly in 1894, were seen in a number of localities, though usually partly covered by leaves. The insects were exceedingly abundant, their pupal shells lying in heaps at the bases of favored trees, especially oaks. There was no material reduction in their numbers unless in the immediate vicinity of New York City. Trees set a few years ago in localities where the insects were numerous, were badly injured, though as a rule the killing of the smaller twigs can hardly be considered a serious matter. The injury is purely mechanical, and is caused by the female excavating, with saw-like blades, little cells in the twigs for the reception of the eggs. Many of these twigs die, the leaves wilt, turn brown, and present a very unsightly appearance.

Extent of the 1911 Visitation.—Cicadas were present in practically all New York localities recorded during the previous visitation. We were, in addition, able to verify the occurrence of the insect in Washington, Saratoga and northern Rensselaer counties—localities not reported in 1894—and also to record a previously unknown and somewhat remote colony at Fonda, Montgomery county. This brood was exceedingly abundant in New Jersey, and in 1894 was recorded from every county of the state. Eastern Pennsylvania, Maryland, central Virginia and the north-central part of North Carolina include the major portion of the territory inhabited by this brood, though scattering colonies have been reported from Ohio, Indiana and Michigan.

The thirteen-year Cicada is considered as only a race of the seventeen-year insect, though the territories occupied by the two forms overlap in part. Each maintains its distribution and periodicity, though there are records of a few insects appearing a year or two in advance of the main brood. This thirteen-year race appeared in the southern states, centering in Mississippi, western Tennessee and Kentucky, southern Indiana and Illinois, eastern Missouri and Arkansas and northeast Louisiana.

The study of this remarkable insect dates back to colonial days. There are now thirty broods recognized, each with a distribution so accurately charted that it is possible to predict the appearance of the insect years in advance. A most comprehensive account is given in Bulletin 71, Bureau of Entomology, U. S. Department of Agriculture.

AGRICULTURAL LEGISLATION

H. L. Knight

The most far-reaching agricultural legislation of the year took the form of public aid to the federal Department of Agriculture, the state agricultural colleges and experiment stations, state boards of agriculture, secondary and primary schools teaching agriculture, and the many other public agencies engaged in the promotion of agriculture. The federal government, the great majority of the states, and a considerable number of counties and local communities contributed to the support of the various undertakings, at an aggregate expenditure in excess of $30,000,000.

Department of Agriculture Appropriations.—The principal federal legislation was embodied in the annual appropriation act for the Department of Agriculture. This act carried a total of $16,900,016, a net increase of fully 20 per cent. over the previous year. Of this amount, some of the largest allotments were $1,600,250 to the Weather Bureau; $1,654,750 to the Bureau of Animal Industry (besides the permanent appropriation of $3,000,000 per annum for meat inspection); $2,061,686 to the Bureau of Plant Industry; $5,533,100 to the Forest Service, with $1,000,000 additional available for fighting forest fires if needed; $963,780 to the Bureau of Chemistry, largely for the enforcement of the Food and Drugs Act; $601,920 to the Bureau of Entomology; and $1,864,000 to the Office of Experiment Stations, of which $1,440,000 is allotted to the various state experiment stations. (See *supra, The Year 1911.*)

Insecticides and Fungicides.—A federal insecticide and fungicide law

went into effect Jan. 1, 1911. This act prohibits the manufacture, sale, or transportation in interstate commerce, the District of Columbia, and the Territories, of adulterated or misbranded insecticides or fungicides, and corresponds in a general way to the federal Food and Drugs Act. A new insecticide law was enacted in California requiring registration on or before July 1 of each year, and the issuing of a certificate authorizing the sale of insecticides, also the proper labeling of insecticides and fungicides. Wisconsin adopted a similar law.

Farmers' Free-List Bill.—From the economic point of view, agriculture was directly interested in the tariff legislation under consideration by Congress. The Canadian reciprocity bill in particular encountered strong opposition from farmers, especially in the northern states, on the ground that the lowering of tariff duties would result in disastrous competition from Canadian farms. A so-called "farmers' free-list" bill was devised to compensate farmers for any such losses by removing the duties on many of the commodities which they commonly purchased. The reciprocity bill became law July 26, but was rendered ineffective by the failure of the Canadian Parliament to ratify the agreement and the subsequent victory of the party opposed to it in Canada. The farmers' free-list bill was vetoed by President Taft, as were also attempted revisions of the wool, cotton, and other schedules of the existing tariff law. (See IV, *The Tariff;* and XIV, *Public Finance.*)

Federal Legislation Pending.—A large number of other bills of agricultural interest were pending in Congress at the close of the extra session. Several proposed the federal regulation of the importation and interstate transportation of nursery stock, with a view to preventing the introduction and spread of plant diseases and insect pests. Others looked toward a revision of the meat inspection act, the Food and Drugs Act, and the oleomargarine laws, the undertaking of the federal construction of roads and drainage projects, and many other propositions of a special or local interest. A number of bills would provide federal appropriations to the states for instruction in agriculture, the mechanic arts, and home economics in secondary schools, for collegiate work in forestry, for extension work in agriculture, for research in home economics, and for branch experiment stations.

State Legislation.—The legislatures of most of the states were in session in 1911, and considerable agricultural legislation resulted, especially the enactment and strengthening of control measures as regards the sale of foods and drugs, feedingstuffs, fertilizers, seeds, etc.

Pure Food Laws.—New pure food laws were adopted in Florida, Idaho, Maine, Montana, Texas, and Wyoming, and many others were amended, some to bring about closer conformity with the federal Food and Drugs Act, and others in the direction of greater stringency, as by requiring the net weights of all package goods to be declared, and regulating the sale of cold-storage products. Maine provided for the inspection of its canned goods, and Florida forbade the sale of green or otherwise unfit fruit. In Massachusetts a drastic milk law which would have transferred supervision from local communities to the state board of health was vetoed by the governor. A bill regulating commission-house practices failed of passage in New York. (See *supra, Dairying.*)

Insect and Plant Disease Control.—An act was passed by the Porto Rico legislature requiring an inspection of all nursery stock, etc., imported into the island. As a result of the appearance of the Mediterranean fruit fly in the island of Cahu, Hawaii, an act was passed prohibiting the shipping of fruit therefrom to the other islands. Florida and Wisconsin amended their nursery inspection laws, and Colorado, Massachusetts, and Vermont were among the states legislating for the destruction of insect pests. Colorado, Kansas, Massachusetts, Pennsylvania, and Vermont provided for apiary inspection.

Roads and Reclamation.—Good roads legislation made considerable headway, notably in California, where a state system to cost not in excess

of $18,000,000 was authorized, Pennsylvania, which adopted plans for 296 state roads, Alabama, Colorado, Connecticut, Delaware, Illinois, Kansas, Missouri, Oklahoma, Washington, Wisconsin, and West Virginia. California, Colorado, Delaware, Georgia, Idaho, Illinois, Indiana, Kansas, Missouri, Nebraska, Nevada, North Carolina, Oklahoma, South Carolina, Wisconsin, and Wyoming enacted laws favoring the reclamation of swamp lands, chiefly by the authorization of drainage districts. (See XIX, *Highways.*)

Live-Stock and Game Laws.—The list of states requiring stallion registration was increased by the addition of Colorado, Michigan, Nebraska, Pennsylvania, and Washington. (See *supra, Live Stock.*) Indiana authorized the formation of farmers' and citizens' associations for insuring live stock. California, Florida, and Georgia took up hog cholera serum distribution. Game laws were amended in many states to provide better protection of game, and in some cases to assist deer-farming and other forms of game-rearing. Reforestation was encouraged in Colorado and Michigan by laws lowering taxation on reforested lands.

Education.—The introduction of agriculture into the public school system was generally favored. For example, Maine required the teaching of agriculture and domestic science in all normal schools, and extended state aid to secondary schools offering agriculture. Iowa decided to expend $25,000 in 1912 and $50,000 annually thereafter for state aid to high schools giving normal courses in agriculture and domestic science, as a means of training teachers for the rural schools. Idaho and North Carolina provided for a system of rural high schools to teach agriculture, and most of the states where such instruction had been begun augmented previous aid. Increased assistance was also quite generally accorded to extension work. (See *supra, The Year 1911;* and XXXVI, *Education.*)

HORTICULTURE

E. J. Glasson

Crop Conditions.— Unseasonable weather conditions quite indiscriminately distributed throughout the United States and Canada resulted in a considerable shortage in this country's total supply of fruits and vegetables. This was noticeable to the consumer in the increased prices of canned and dried products, the reserve supply of which was exported the previous year to meet shortages abroad. Potatoes, likewise, brought high prices. In a good year California can easily produce over 140 million lb. of raisins; the crop for 1911 was only about 96 million lb., and the world's total output of raisins was short the same amount, 96 million lb. The total apple crop for 1911 was estimated at about 30 million bbl., an increase of 20 per cent. over the average for several years.

Foreign Trade.—According to the statistics of the Department of Commerce and Labor, the United States is rapidly developing a big business in fruits with other countries. In the fiscal year 1902, only $8,415,103 worth of fruits was exported. In 1911 these exports amounted to $23,893,663, as compared with $18,885,654 in 1910. In addition to increased shipments of dried and canned fruits, outside markets for fresh pears, apples, and oranges were opened, $5,777,458 worth of fresh apples alone being exported in 1911.

There is also a steady increase in consumption of foreign fruits, the imports amounting to $17,436,184 in 1902; $24,177,160 in 1910; and $27,017,632 in 1911. Of these amounts bananas were responsible for $14,375,075 in 1911, as compared with $11,642,693 in 1910.

Nuts.—The fact that the United States imported $14,497,435 worth of nuts in 1911, over half of which were almonds and walnuts, is suggestive of large opportunities for nut culture in this country. Our infant almond and walnut industries in California and Oregon and the pecan industry in the South Atlantic and

Gulf Coast states are being actively exploited.

Coöperative Marketing.—The California Fruit Growers' Exchange, organized by the citrus fruit growers in 1895, has since that time so mastered the problems of shipment, distribution, development of markets, and reduced the cost of placing the product therein, that it is considered the coöperative model for producers of all kinds of fruits. During the year ending September 30, 1911, California shipped the largest crop of citrus fruit ever grown, about 14 million boxes. The Exchange distributed its share of over half the crop so ably that new markets were opened for the surplus with profit to the growers, and planting operations were greatly increased. The constantly increasing development of similar coöperative organizations in all of our great fruit and truck districts having transportation facilities has been a great factor in the rapid growth of new industries, such as apple growing in the Northwest, cantaloup growing in the Imperial Valley of California, and the Bermuda onion industry in southern Texas. During the past year, coöperative methods were successfully employed by the grape growers of western New York and the Florida orange growers. (See *supra, Agriculture.*)

Spraying.—The combination of self-boiled lime-sulphur and lead arsenate is now recognized as the standard remedy for the principal fungous diseases and insect pests of the apple and peach. Demonstration spraying experiments recently conducted by the Department of Agriculture and by several of the Experiment Stations have done much to revive orcharding in the East. Planting operations everywhere are on the increase, but more noticeably so in the Piedmont region of the South Atlantic states, where the apple boom is making the price of general farming lands abnormally high. (See *supra, Plant Diseases.*)

Fruit Handling.—The investigations of the United States Department of Agriculture, dealing with the handling of fruits from the time they leave the tree until they reach the market, were continued on a broader scale during the year. They have already shown that careful handling in preparing the fruit for market means a minimum of decay or deterioration in transit, on the market, or in storage. They have also shown that the prompt and efficient pre-cooling of carefully handled fruits has a marked influence on their carrying and holding qualities. As fast as they can with the labor at hand, progressive fruit growers are improving their methods of picking, hauling, grading, packing, and loading. Transcontinental railroads have recently erected pre-cooling plants involving millions of dollars, and coöperative associations are building smaller plants.

Orchard Heating.—During the past two or three years, fruit growers in different section have reported considerable success in warding off late spring frosts by distributing large numbers of small oil or coal-burning heaters throughout the orchards. Others have tried these methods and failed. Through the combined efforts of government and state investigators, manufacturers of orchard heaters, and the growers, it is expected that orchard heating will soon become a well-developed and profitable practice.

Recent Productions.—Among the recent productions may be mentioned the Lue Gim Gong orange, named after its originator, a Floridian, which on account of its superior dessert, shipping, and keeping qualities bids fair to become the standard summer orange of Florida; and Burbank's Standard prune, pronounced by many growers the best ever produced. To these should be added several promising varieties of fruits and nuts which were brought to light in different parts of the country. The many new and superior ornamental shrubs and flowers which have appeared in recent years testify to the skill of the nurseryman and florists in meeting the rapidly increasing popular demand for beautiful surroundings.

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FISHERIES

ETHEL M. SMITH

With its thousands of miles of coast line, immense lake areas, and great river systems, the United States naturally has fishery resources almost unsurpassed. Some of these resources are as yet undeveloped. Others have been subject to overfishing and abuse. In general, however, the fishing industries of this country are a thriving branch of its commercial activities, and the wealth they represent is considerable.

General Statistics.—The most recent canvass of the fisheries of the United States, for the year 1908 (Census Bureau), showed, exclusive of Alaska, an investment of $42,021,000, with 143,881 fishermen, 6,933 vessels, and 83,549 boats employed, and a product of 1,893,454,000 lb., worth to the fishermen $54,031,000. Statistics for Alaska, collected annually by the United States Bureau of Fisheries, showed for 1910 $20,711,422 invested and 15,620 persons engaged in all branches, with a catch of 214,536,433 lb. of products. The fact that the packing establishments hire the fishermen obscures the first value of the catch, but the value of the prepared products of Alaska fisheries was $13,259,859.

New England.—The historic vessel fisheries centering at Boston and Gloucester yielded in 1910 a product of 181,734,272 lb., worth $4,833,341. The catch consists chiefly of cod, cusk, hake, halibut, mackerel, herring, haddock and pollock. For 1911, monthly returns up to Sept. 30 showed an aggregate of 134,314,462 lb., with a value of $3,672,131. Of the once great whale fishery of New England, there is now but a remnant, sailing chiefly from New Bedford, Mass. Maine, Massachusetts, and Rhode Island supply the lobster market of the United States, characterized in the season of 1910-1911 by the unprecedented prices of $0.60 to $0.90 per lb. in shell. Connecticut has an oyster industry which, during the year ending June 30, 1910, produced 3,384,300 bus., valued at $1,892,759 and ranking this state, as heretofore, with Maryland and Virginia, the other great oyster producers. The total value of the New England fisheries in 1908 was $15,139,000.

Middle Atlantic States.—The oyster fishery, which is, for the whole country, one-third as great in value as all other fisheries combined, is by far the most important in the Middle Atlantic states, drawing from the

rich grounds of Chesapeake and Delaware Bays and the New York waters of Long Island Sound. In these areas, as elsewhere, the natural oyster beds are practically depleted, and the fishery is maintained by oyster planting. The other chief products of the Middle Atlantic states are shad, squeteague, alewives, menhaden, and crabs. The shad fishery, because of overfishing permitted through inadequate or conflicting legislation in the interested states, has undergone a decline of 50 per cent. in the last twenty years. The total value of the fishery products of the Middle Atlantic states in 1908 was $16,302,000.

South Atlantic States.—In this region also the oyster fishery is the most important, other products being mullet, snappers, squeteague, shad, sheepshead, Spanish mackerel, salt-water drum, and crabs. The fisheries of this section of the coast are much less important than those farther north, but chiefly for the reason that they are by no means so well developed. The value of the products in 1908 was $4,034,000.

Gulf States.—Second to oysters in importance on the Gulf Coast are sponges, found only in Florida and yielding a product of 622,000 lb., worth $545,000, in 1908. A government survey of the oyster grounds of Alabama and Mississippi, completed in May, 1911, should enable these states to give great impetus to their at present undeveloped oyster industry. The sponge beds are being seriously depleted, and remedy for this is sought both by legislation and a recently developed system of sponge culture. Since July, 1910, the enforcement of the federal sponge law has been in the hands of the United States Bureau of Fisheries, and a special appropriation for the purpose was provided by the last Congress. In value the fisheries of the Gulf States in 1908 reached a total of $4,825,000, the chief products other than oysters and sponges being mullet, snappers, sheepshead, squeteague, Spanish mackerel and shrimps.

Pacific States.—The salmon fisheries of the Pacific Coast are more valuable than any other fisheries in the United States except the oyster, yielding in 1909 a catch of 189,402,422 lb., worth $5,890,680. The Columbia River and Puget Sound regions, however, have suffered from unwise and conflicting state laws. For the Columbia this condition has been improved to some extent through an agreement adopted by the states in 1909, and the International Fisheries Commission of 1908-09 recommended international control of all fisheries in boundary waters between the United States and Canada. When, however, the bill embodying such recommendations passed the Senate May 22, 1911, Puget Sound and tributaries were among the large and important waters excluded from its provisions. California and Washington have large oyster fisheries, for the transplanted eastern oyster in the one state and the native product in the other. The value of all fishery products of the Pacific states in 1908 was $6,839,000.

Alaska.—The catch of salmon in Alaska in 1910 was 33,679,254 fish, or 172,716,074 lb., worth when canned, pickled, etc., $11,520,112. The halibut fisheries of Alaska for the same year yielded 21,630,289 lb., worth $810,050; the cod fisheries 3,019,023 lb., worth $63,443, and the herring fisheries a catch worth $115,765 (value of prepared product in each instance). Since 1909 the fur-seal industry of the Pribilof Islands, to ensure its protection, has been managed directly by the Government instead of under lease as formerly. The herd yielded 12,920 skins in 1910, worth $378,189 in net proceeds to the Government, or about three times the previous year's revenue from the lease. An international conference, at which Russia, Japan, Great Britain and the United States were represented, was assembled in Washington in May, 1911, and drafted an agreement prohibiting pelagic sealing by citizens of any of these nations for fifteen years; thus, by removing the great and long persistent agency of destruction, promising the speedy recuperation of all the seal herds of the North Pacific Ocean.

Great Lakes.—The fisheries of the Great Lakes were worth $3,767,000 in 1908, the chief products being lake herring, lake trout, pike perch, and

whitefish. The recommendations of the International Fisheries Commission for national and international control of these fisheries shared as to their most important provisions the fate of the Puget Sound recommendations in the bill passed by the Senate last May, leaving these valuable resources still subject to illogical and conflicting local laws.

Interior Waters.—The most important interior fisheries are conducted in streams of the Mississippi basin, yielding in 1908 a product worth $3,125,000, consisting chiefly of carp, buffalo-fish, catfish, mussel shells, black bass, crappie, paddlefish, sturgeon and frogs. In the interests of the pearl-button industry, artificial propagation of the pearly mussels has been in progress at the United States Fisheries station at Fairport, Iowa, since July, 1910.

United States Bureau of Fisheries.—This Bureau, formerly the United States Fish Commission, is a part of the Department of Commerce and Labor. Its basic function is economic biological research, such activities during 1911 comprising investigations of the oyster grounds of Alabama and Mississippi and means of combating the destructive oyster drill; of the life history of the Pacific salmons, especially as revealed in their scale structure; and of fish diseases, particularly a thyroid tumor in trouts which is thought to bear a relation to human cancer; the accumulation of data regarding the freshwater mussel resources; biological surveys of numerous inland waters; and a survey of the Canal Zone in coöperation with the Smithsonian Institution.

The fish-cultural work of the Bureau, conducted at the 36 regular hatcheries and 90 auxiliary stations, yielded an output of 3,087,000,000 young fish of about fifty species, to be distributed in suitable waters. Three new hatcheries, one at Homer, Minn., and two in Hoods Canal, Washington, were ready for operation in the fall of 1911.

A third branch of the Bureau's work, study of the commercial fisheries, consisted in 1911 of a special canvass of the oyster fisheries, which is still in progress, and explorations by the Fisheries Steamer *Albatross*, which resulted in the location of prolific new fishing grounds for halibut in Alaska.

The fisheries are controlled by state and not federal laws, except the sponge fisheries of Florida and all fisheries in Alaska. With these exceptions, therefore, the Bureau of Fisheries has no administrative, but only advisory, powers. The important fishing interests of Alaska, however, are directly under Government control, and a special Alaska fisheries service is organized within the Bureau. By the sundry civil bill of March 4, 1911, this service was enlarged in personnel and extended to cover the protection not only of all aquatic resources but of all species of land fur-bearing animals of Alaska besides.

The Bureau received an appropriation of $1,233,016 to cover its various activities during the fiscal year ending June 30, 1912.

XXIII. MINING AND METALLURGY

MINING AND ORE DRESSING

CHARLES E. LOCKE

The Mining Industry.—During the past year the mining industry has exhibited the same features as many other industries, viz: no general boom nor yet great depression but just a quiet, steady business, above the normal in some cases and below it in others. All of this is due to the prevailing unsettled business conditions of the country and to the general hesitancy to undertake any new enterprises until the future begins to look brighter after the trust and tariff conditions are settled and the next presidential election is over.

Mexico.—The revolution in our neighboring republic of Mexico has fortunately come to an end without any serious results and the future there looks bright under the new *régime*. It is fair to say that even while the revolution was on, the active mines, with a few exceptions, suffered very little and it was only new enterprises that were held back through the desire of capital to wait until times were more peaceful.

Strikes.—There have been no serious labor troubles. A prolonged coal miners' strike in British Columbia affected the smelters somewhat.

Alaska has received more than its share of attention owing to the controversies that have developed to such a point as to require settlement at Washington. Naturally the Alaskan people are anxious for the development of their mineral resources. The country should not turn them over into the hands of a monopoly nor should they part with them with the reckless prodigality which has marked the past. An opportunity exists for the government to dispose of its Alaskan minerals in such a manner that they will be properly conserved and at the same time retain at least part control and participate in the profits. Incidentally the "apex" mining law should be abandoned for something less troublesome and more logical. (See IV, *The Conservation Question;* and XII, *Alaska.*)

The United States Bureau of Mines, which started in 1910 as a separate department from the U. S. Geological Survey, has met with marked success. Its main work has so far been with the more pressing problems of conservation not only of the mineral wealth but also more especially the lives of the miners. Valuable results have been obtained from the testing station at Pittsburg and from the demonstrating cars which cover different districts of the country and educate the miners in modern rescue methods. (See XIX, *Conservation.*)

Mining Machinery.—In mining apparatus there is nothing radically new. The new tunnelling machines which were to chip their way through solid rock by means of a multitude of hammers appear not to have been successful in replacing the time-honored drill and explosive. Advances have been made in economies on existing apparatus. The use of the high-speed stoping and hammer drills, on the principle of the pneumatic riveting hammer, is on the increase, although the old-style piston drills still have the call where heavy work and deep holes are required. Electricity is gaining more and more for tramming, hoisting, pumping and general use, but the ideal electric drill has not been invented. At Butte, Mont., the Amalgamated Copper Com-

pany has replaced steam by electricity, but the electricity is used direct only for pumping, and in other cases the electric motors have been coupled to the compressors and compressed air preheated runs the hoists and drills. By this scheme the company made use of much of its old machinery and has to pay interest charges only on the new electric motors. (See XXXII, *Electrical Engineering.*)

Low Grade Ores.—The development of large low-grade deposits has brought out new problems in mining methods. Such deposits approach the nearest to a straight manufacturing enterprise. Prospecting by diamond and churn drills enable the amount and value of the ore to be determined definitely in advance; where the ore is near the surface, the overburden of waste is removed by stripping and the ore mined in the open by steam shovels, or where the ore is deep large scale operations are carried on cheaply by some one of the caving systems of mining. In either case it becomes simply an example in arithmetic to determine the necessary capital outlay, working costs and final profits.

Gold.—In gold mining the most excitement has been over the Porcupine district of Ontario. It is too early to make definite statements, but experts who are familiar with it claim that there are already three or four prospects that have been developed to the point where a reduction plant is warranted and a profit is in sight. The advent of the railroad during the past summer served to reduce costs. The extensive fires which swept over the district in the early autumn, while regrettable on account of the loss of life, were a blessing in serving to clear off the country and help prospecting. The strict Canadian laws have put a curb on the extensive "wild catting" and fake promotions that have marked the opening up of new districts in the past. At Cripple Creek the completion of the drainage tunnel has reduced pumping costs and rendered ore accessible at greater depths. A further extension of the drainage tunnel is under way. Alaska still contributes its normal amount to the world's gold supply. The rich diggings are largely exhausted and the output now comes mostly from lower-grade placers worked on large scale by hydraulicking and dredging.

Silver.—In silver mining the increased price of silver has caused the mines to yield better returns. The Cobalt district of Ontario has held up to its past record, but it is not expected that this rate can be maintained for a long period. Already some of the smaller mines have about exhausted their ground and some of the larger mines have made reductions in their dividends. Attention has been given to the handling of lower-grade rock by concentration and also to the reduction of high-grade ore into bullion at the mine to save freight and smelter charges. These and other economies will serve partly to offset the depletion of the high-grade ore reserves. The comparatively recent application of the cyanide process to straight silver ores in Mexico has made an asset of low-grade ore and old dumps formerly considered worthless. The rejuvenation and consolidation of the famous Comstock mines has led to economical working and also to the discovery of new ore bodies which give promise of increased yield from this quarter.

Copper.—The copper industry has suffered from a low price for the metal due to a large surplus, to the fear of a large increase in production in the near future, and to a slackened demand owing to general unsettled business conditions. The large low-grade porphyry deposits already producing are the Nevada Consolidated, treating over 6,000 tons daily of 1.70 per cent. ore; the Utah Copper, treating 20,000 tons daily of 1.67 per cent. ore; and the Miami in Arizona treating 3,000 tons daily of about 2.58 per cent. Others which will be producing in the near future are the Ray Consolidated in Arizona, with 8,000 tons daily averaging 2.17 per cent.; the Chino in New Mexico, with 5,000 tons daily averaging 2.25 per cent. copper; and the Inspiration in Arizona, with 5,000 tons daily averaging about 2 per cent. There are still other small properties which will swell the grand total. Ore re-

serves in these properties are approximately as follows: Nevada Cons., 40,000,000 tons; Utah Copper, 203,000,000 tons; Miami, 18,000,000 tons; Ray, 78,000,000 tons; Chino, 54,000,000 tons; Inspiration, 30,000,000 tons.

In the Lake Superior district the proposed merger by the Calumet and Hecla Co. of all its subsidiaries into one big company has been abandoned on account of the opposition met through the courts. The terms of the merger were probably as fair as it was possible to make them, but it was impossible to satisfy every one and the dissatisfied ones obtained court injunctions. Rather than put the merger through by a long legal fight it was given up, much to the disappointment of those who realized the economies that would result from it.

In California the farmers have succeeded in closing some of the mines whose smelters were claimed to give off fumes which damaged vegetation. In Montana also the fume question is not finally settled, although none of the mines have had to cease operations. (See *infra, Copper;* and XXXII, *Electrical Engineering.*)

Coal and iron have been in only moderate demand. The iron ore index—the shipments through the canal at Sault Ste. Marie—showed in 1911 to Sept. 30 a total of 24,106,818 long tons, or a decrease of over ten million tons compared with 1910. Steel outlook is gloomy owing to price cutting, government trust investigation and general lack of a business boom. Considerable Cuban iron ore is now coming to supply the iron blast furnaces located on or near the Atlantic seaboard.

Ore Dressing.—In the field of ore dressing the work of the year has been toward the perfection and more economical use of existing machines and methods. Water separation is almost universal, with pneumatic, magnetic and electrostatic processes applied only to special problems. The last is now fully developed to a commercial stage and a slow, steady growth is predicted. Flotation methods are little used on this continent, one exception being the Basin (Montana) plant of the Butte & Superior Co., which has recently installed a flotation process for zinc ores. (See *infra, Lead* and *Zinc.*) Inventors are working and it is possible that we may see important developments in ore-dressing methods in the near future. Examples of increased economies are in the large western copper mills, in which the units originally designed to treat 400 or 500 tons daily are now treating double that amount with practically the same machinery; also in the Lake Superior copper district, where the Calumet & Hecla Company have installed a regrinding plant and are recovering copper at a profit from tailings which formerly went to waste. It is the hope of the managers to be able to mine and treat ultimately rock which is not worth over a dollar per ton.

COAL, COKE, AND PETROLEUM

E. B. Wilson

Production.—In 1911 the coal output was approximately 460,000,000 short tons. The anthracite mines of Northeastern Pennsylvania produced 93,000,000 tons, a quantity in excess of the demand, several million tons being stocked in anticipation of a coal strike in 1912. The labor leaders claim that the Strike Commission ruling, now eight years old, is unfair, owing to the increased cost of living. The operators of the Arkansas, Kansas, Oklahoma and Missouri coal fields, which were tied up by strikes in 1910, settled their differences with the miners by arbitration. On account of the strike in these states, the coal trade built up by years of labor has, to a considerable extent, been lost, as many who formerly used coal have switched to natural gas and petroleum as fuel. (See XXVII, *State Geological Surveys.*)

Consumption.—The present demand for coal on the Pacific Coast does not greatly exceed 1 ton per capita,

while the total demand for coal is 5¼ tons per capita in the United States.

Alaska.—The Cunningham claims in Alaska, although taken up legitimately, were withdrawn from entry by the Department of the Interior; nevertheless, the Alaskan coal lands continue to be a source of friction, even since Secretary Ballinger's resignation. The latest phase of the controversy arises from the granting to a syndicate, of railroad terminal facilities which practically control the coal situation so far as the Katella coal field is concerned.

Mine Explosions.—The most serious disasters that occurred in 1911 were the Price-Pancoast mine fire near Scranton, Pa., which smothered 72 men; the Banner mine explosion in Alabama, in which 128 men, mostly convicts, lost their lives; the Sykesville, Pa., explosion, which killed 21 men; the Cokedale, Colo., explosion, in which 15 perished; the Adrian mine, Pa., explosion, in which 23 were killed; the Bottom Creek, W. Va., disaster, in which 18 lost their lives, and the Cross Mt. mine, Tenn., disaster on Dec. 9, in which over 100 perished.

Accident Prevention.—The United States Bureau of Mines has given special attention this year to rescue work and instructions in first aid to the injured. Practical measures to prevent accidents have been adopted by several large coal companies, particularly the H. C. Frick Coke Company, a subsidiary of the United States Steel Corporation. Using for its motto "Safety the First Consideration," this company continually warns employees inside and outside the mine to be careful of their lives and limbs and conform to the colliery rules. During the year, a light serviceable rescue apparatus has appeared which is likely to replace the dangerous, expensive and heavy oxygen helmet now universally adopted.

Coal Lands.—Revaluation of government coal lands and their withdrawal from entry at former prices caused some dissatisfaction during 1911. Lands within 15 miles of a railroad, which were once open to entry at $20 per acre, are now any price between $50 and $500 per acre. The uncertainty of western coal beds proving continuous, and the absence of government guarantees of continuity, make the new prices as uninviting to the wise rich as to the unwise poor, and tends to conservation.

Coke.—During 1911, Illinois, Ohio and Indiana increased their coke output, by-product coke ovens having been installed and coking coal shipped to them from other states. Washington, Utah, New Mexico, Tennessee and Alabama increased their production of coke, while Pennsylvania and West Virginia curtailed their coke output. About 18 per cent. of the coke in the United States in 1911 was manufactured in by-product ovens. The production of coke in the Pocahontas field materially decreased in 1911 and will probably further diminish in the future, as coke making was ever a side issue in that field, to utilize slack that is now recognized as good coal. The Koppers oven has been introduced at the U. S. Steel Corporation's large steel plants at Joliet, Ill., and Gary, Ind. No improvements have been made in coke ovens during the year, and no waste-heat ovens have been introduced.

Petroleum.—During 1911, the Appalachian oil field was extended in Kentucky, one 100-barrel well having been drilled in Wayne County. With the abandonment of the "Gary" well in Washington County, Pa., the history of the oldest producing oil well in the United States closes. Over 720 wells have been abandoned in the Lima, O., field during the year. Illinois still continues to produce sufficient oil to attract attention, even although it is not so valuable as that of more easterly fields.

The mid-continental field is second to California in oil production, although the price is but $0.50 per barrel. The Vivian (La.) well is producing enormous quantities of crude petroleum; the pressure upon the oil in this well is said to have no parallel in the United States. With a partially opened cap it flows 25,000 barrels, and this output could be greatly increased if there were facilities to care for it. In Texas the production of oil is increasing, and the Texas

Company is constructing storage tanks at Beaumont, preparatory to making that place a distributing station. The Electra oil field, in Wachita County, Texas, is the latest to attract attention, the output being nearly 7,000 barrels per day. California continues to be the greatest producing oil state in the United States, 75,000,000 barrels being the estimated output for 1911. Owing to the viscidity of California oil it is necessary to use either the rifled-pipe system or the hot-oil process to pump it through the pipe lines. Both processes are patented. It is reported that 1,000,000 barrels of California oil was sold at $0.30 per barrel; if true, this shows a decrease of $0.35 per barrel for the same grade of oil in 1910.

The total production of oil in the United States is estimated at 200,000,000 bbl. in 1911, although it is exceedingly difficult to obtain exact figures. (See XXVII, *State Geological Surveys.*)

Natural Gas.—California passed a law making it a misdemeanor, punishable by fine or imprisonment, or both, if oil operators allow natural gas to go to waste from their wells. This has resulted in gasolene being manufactured at Buena Vista Hills, and other operations are under way. It is reported that 1,000 cu. ft. of California gas yields from one to three gals. of light oil. Nearly all dry oil wells furnish natural gas, which in the Appalachian field is worth fully as much as a money maker as petroleum.

Gasolene.—Near Wellsburg, W. Va., 150,000 cu. ft. of natural gas compressed to 150 lb. per sq. in. produces from 500 to 800 gal. of gasolene. The gas, after passing through the compressors, is returned to the gas mains, and being freed from a product susceptible to freezing flows better in winter. As the compressors produce a partial vacuum, they have started supposedly dry oil wells, so that a little oil can be pumped from them daily.

Another method of obtaining gasolene from natural gas is known as the "freezing process." It consists in precipitating the gasolene, which is in gas in the form of vapor, by means of freezing mixtures.

Machinery.—Practically no improvements have been made in coal-mining machinery. However, the installation of electrical appliances has increased. There have been no new coal-washing machines placed on the market, although several coal-washing plants were built, and several abandoned. Exhaust-steam turbines have been introduced in three mines with excellent results.

METALLURGY

IRON AND STEEL

BRADLEY STOUGHTON

Ore Developments.—The development of the Texas iron-ore fields has continued during the year, as has also the importation of European iron ore, which is now attracting a good deal of attention from ironmasters near the Atlantic Coast. It is reported that some very large contracts for iron ore from Sweden and elsewhere have been made and that it is probable that heavy importations will follow. The most important new find of iron ore during the year was a large deposit of high grade ore in the Vermillion field, so much prized because of the comparative ease with which it is treated in the furnace. There are also several other finds in the Lake Superior region as extensions of the already known ranges.

Blast-Drying Apparatus.—A blast furnace in Luxemburg has installed a process for drying the air used for smelting by means of calcium chloride, which has the advantage over the usual refrigerating process in that the cost of installation is reduced over 70 per cent. In practice the process consists in bringing the air that is to be heated and blown into the furnace first in contact with calcium chloride, which reduces the moisture in it to less than 1.5 grammes per cubic meter. After about 6 to 8 hours the calcium chloride is charged with moisture and must be regenerated; this is accomplished by heating it by

means of the flue gases from the boilers and the blast-furnace stoves. The calcium chloride apparatus is installed in triplicate, thus always affording one unit available for drying purposes.

At a Welsh blast furnace the air is dried by means of refrigeration with liquid ammonia direct, thus dispensing with the use of brine. The ammonia is made by evaporation from ammonia liquor by means of the latent heat in the waste steam from the blowing engines; after condensation, it is returned in the form of strong liquor and evaporated again by the waste steam, the process being continuous.

Portland Cement from Blast-Furnace Slag.—An interesting series of figures is the growth of the blast-furnace slag-cement industry since its inception in 1900, when some 32,000 bbl. was made by a simple and cheap treatment of what was almost a waste product. This manufacture has developed so rapidly that as much as 7,000,000 bbl.—equivalent to over 1,000,000 gross tons—was made in the year 1910, being nearly 10 per cent. of the total Portland-cement production of the United States.

Use of Flux in Blast Furnaces.—In this same connection it is interesting to note the relative proportions of limestone flux used for slag-making purposes in the blast furnaces of the country, which was actually a little less in the year 1910 on the average (about 1,200 lb. per gross ton of pig iron made) than it was in 1900.

Turbine Blowing Engines.—Steam turbine blowing engines have been installed at at least three American blast furnaces, and two plants have been in operation over one year. The result seems to show an increased production of iron on account of more uniform blowing conditions, and decreased cost of blowing over the usual reciprocating type of engine. The introduction of this type of blower doubtless is of far-reaching importance in blast-furnace equipment, although the significance of it is at present recognized by only a few men whose mechanical training has been better than that of their fellows.

Briquetting Iron Borings.—A by-product of almost every machine-shop consists of borings, turnings and drillings of cast iron, wrought iron and steel—in short, metallic chips which are melted only with excessive waste of metal, due either to much oxidation on account of the proportionately large surface exposed, or to blowing out of the furnace (if cupola is used). A new method of treating these in the cupola or open-hearth furnace is to briquette them into solid masses, which do not disintegrate during their passage through the furnace. By means of the Ronay process, of which there are now several installations, the chips are agglomerated by means of pressure alone, but allowing a few moments for the force to exert its full influence. The pressure employed is 35,000 lb. per sq. in., and the cost of the process is said to be about $0.50 per ton. As metallic chips can be bought for about $6 per ton, and the briquettes are nearly equal to pig iron or heavy steel costing $10 to $14 per ton, the process seems to have a bright future before it under proper conditions.

Changeable Open-Hearth Furnace Ports.—The brickwork of the open-hearth furnace port suffers more damage from heat than almost any other part of the apparatus, because it receives almost the full temperature of the gases of combustion, and it is in consequence subject to a comparatively short life. This is intensified by the circumstance that the form of the ports must be maintained pretty constant in order that they may direct the gas and air in a uniform manner throughout the operation. Many attempts have been made to increase the resistance of this part of the furnace, in order that it may be kept a longer time in service before it becomes necessary to shut off the heat for the purpose of making repairs. Now a different system from this is introduced from Germany, whereby no special effort is made to increase the life of the ports, but they are instead made in such a way that a worn-out port can be removed and a fresh one substituted without closing down the furnace for more than 5 hours, which can therefore be easily accomplished during the customary week-end shutdown. In this

way, basic furnaces which might normally be obliged to go out of commission after 350 to 500 heats, have been made to last for 1,000 heats with three changes of ports.

Continuous Pouring Spout.—A device to achieve the continuous pouring of metal from air furnaces and open-hearth furnaces has been patented by Geo. K. Hooper and installed in at least one malleable-iron foundry in America. By means of this spout, the metal in the furnace may be distributed to as many different ladles as is desired without cutting off its flow, thus saving time, heat, drip of metal, use of very large ladles, etc.

Electric Smelting of Iron Ore.—The success of electric smelting of iron ore under special conditions of high-priced coke and cheap power has been further confirmed, not only at the two previous furnaces,—that is, at Domnarfvet, Sweden, and Heroult, Cal.—but by the establishment of a new furnace and new plant of the Swedish Association of Iron Masters at Trolhättan. In the *Engineering and Mining Journal* of Sept. 30, 1911, and in *Metallurgical and Chemical Engineering* of Oct., 1911, are given complete descriptions of this plant and practice. An important innovation is the use of screw joints on the carbon electrodes, thus avoiding the waste due to having to throw away the butts of old electrodes; this improvement has reduced the consumption of electrodes from 10.28 kilos per ton of pig iron produced to 5.5 kilos. The consumption of electricity is said to be 1,736 kw. hr. per ton of iron, or 5.05 tons of pig iron produced per kw.-year. The result of this furnace operation has led to the contemplated early installation of three additional furnaces in Sweden and one in Norway. The Trolhättan furnace has been in continuous operation since Aug. 4, 1911, having been first started in Nov., 1910. This furnace is substantially the same general type as the Domnarfvet furnace, with certain changes suggested by experience at the latter plant. One of these changes is an increase in the pressure of the tunnel-head gases, which, it will be remembered, are taken off from near the top of the furnace and blown against the vault of the smelting crucible to cool it; another is charging the ore nearer the middle of the shaft; by these means the efficiency of carbon reduction is increased, and the carbon dioxide in the escaping gases is brought to over 30 per cent.

Combination Electro-Open Hearth and Electro-Bessemer Furnaces.—The chief function of electric refining processes from the industrial standpoint is doubtless the super-refining of steel which has already been purified as far as is commercially practicable in furnaces using cheaper sources of heat—namely, open-hearth or Bessemer furnaces, and perhaps even puddling and Bell-Krupp furnaces as the electric processes develop. Substantially all of the 50,000 tons of electric steel produced in America in 1910 was made by purification in Bessemer or open-hearth furnaces, followed by further refining in electric furnaces, this super-refining consisting virtually in the removal of last traces of phosphorus, and of sulphur, gases and entangled solid particles of oxidized metals. Realizing this, the Homestead Steel Works has been operating for some time an open-hearth furnace to which have been added two graphite electrodes, which can be brought into play for heating purposes in a manner similar to the action of the ordinary Heroult steel furnace, after the customary open-hearth process of purification is completed, thus avoiding the transfer of metal from one furnace to another. An unconfirmed Consular Report from England states also that a firm in Sheffield is installing a double-ended Bessemer converter, in one part of which the metal can be purified by the ordinary Bessemer process, and then transferred to the opposite end by merely tilting the converter. In this further end are situated electrodes by means of which electric current is brought to heat the charge by arc and resistance, thus maintaining the metal at the desired temperature while the super-refining is carried on. The general report for the year 1911 is that electric refining in the three chief siderurgical countries—America, Germany and England—is progressing at a rate as rapid as could reasonably be expected in view

of the large cost for installation and operation, and the financial conditions in the industry at present. One German plant has even gone so far as regularly to produce ingots by purification complete from pig iron to finished steel in the electric furnace.

An Electric Furnace for Heating for Rolling and Forging.—In heating iron and steel previous to rolling or forging, a loss of metal often as great as 5 per cent. of the weight of the piece is caused by oxidation at each operation. The smaller the pieces heated, the greater the proportionate waste, and this may even result sometimes, in the case of making drop-forgings, for example, in the metal coming out of the heating furnace without quite enough volume left to fill the die. By virtue of its capacity to heat in a non-oxidizing atmosphere the electric furnace can avoid this loss to a large degree, and one American forging plant has installed such a furnace for this purpose. An accompanying advantage of such a furnace is that it can be used on occasion for annealing, in which its unexcelled control of the temperature would tend to produce annealed forgings of higher quality.

Titanium-Treated Rails.—The statistics for the year 1910 showed that nearly 196,000 tons of rails, out of a total production of 3,634,000 tons, were treated with titanium in the United States, and the report indicates that more than double this amount will be so treated during 1911. Titanium gives a slight superrefining of molten open-hearth or Bessemer steel by removing nitrogen, oxygen and entangled solid particles, thereby increasing the strength and toughness of the metal. In this connection we may note a tendency of the railroads at present to increase the weight of rail sections to 125 and even 135 lb. per yard, with an accompanying increase in the percentage of carbon to nearly 1 per cent. When the metal is low in phosphorus, this increase in carbon is not accompanied by a dangerous brittleness.

Solubility of Carbon in Iron.—Ruff and Goecke publish in *Metallurgie* for July 22, 1911, the account of some discoveries they have made in the solubility of carbon in iron. They heated carbon in contact with iron in an electric furnace to temperatures ranging from 1,100 to 2,500° C. (2,012 to 4,532° F.) and determined the amount of carbon absorbed. On plotting their results in graphic form, there is seen to be a rise in solubility with increase in temperature up to 6.7 per cent. of carbon, which corresponds to the chemical compound Fe_3C, and which was obtained at 1,837° C. After this point there is a temporary decrease in the rate of absorption with increasing temperature, but carbon continues to be dissolved until, at 2,220° C., there is 9.7 per cent. absorbed, corresponding to the formula Fe_2C. This is the maximum amount dissolved; with further increase in temperature there was a lowering in the amount of carbon absorbed.

Increase in Iron and Steel Exports.—No development of the American iron and steel situation has created more interest in the industry than the notable increase in exports, which was well over 15 per cent. in 1910, and probably will be higher than that in 1911.

COPPER

L. S. Austin

Introductory.—There has been a remarkable development in the operating of basic-lined converters during the year 1911, the methods of lining and construction having been previously worked out. In many cases the old or standard shells and stands have been utilized. Much of the old equipment has been rendered useless, so that one feels that a depreciation allowance of 10 to 15 per cent. per annum is justified. From this point of view many installations have been too permanent and expensive. In reverberatory practice, improvement has shown itself in the increased use of fuel oil and in increased tonnage per furnace. It is recognized in blast-furnace work that the charge should be made of uniform constitution, and to this end increased care must be taken in bedding ore. Where a given plant is using both the blast and reverberatory furnaces, the precaution is now taken of screening, so

that the dust-free ore goes to the blast-furnace, the fines to the reverberatory.

Ore Handling at Smelters.—To take ores as they are delivered at the works, to sample and store them, and finally deliver them to the furnaces, is now effectively accomplished by troughed conveying belts. The system as installed at Cananea, Mex., has proved to be flexible in use as well as reliable, and gives a uniform product for the furnaces. Three or four years of continuous use have shown that these belts are durable. For delivering ore one-fourth of a mile to roasters, the belt has proved to be better than the electric tram. Costs may be given at $0.04 per ton.

Basic Converters.—The basic converting process consists in treating copper matte in converters of the barrel type, which have been lined with magnesia or basic bricks. The regular or older practice consisted in lining the converter shell with silicious material, preferably quartz, to which had been added some 15 per cent. of clay, and water sufficient to make a stiff coherent mass. This was rammed into place inside the shell, forming walls 18 to 24 in. thick. As described in THE YEAR BOOK, for 1910, p. 507, infusible iron oxide is rapidly formed, but it borrows silica from the lining and there results a fusible slag. When several charges have been treated, that is, in 12 to 18 hours, the silicious lining has been eaten away and the converter shell must be relined.

In the newer basic practice the principle of the operation is quite different. It is intended that the lining shall remain and that the need of the iron oxide shall be supplied by addition of silicious ore direct to the molten bath. A single lining may last two months, and an output of 2,000 to 4,000 tons of blister copper may be obtained. Thus has resulted a radical change in converter practice.

One type of basic converter, the Pierce-Smith, has a shell 10 ft. in diameter by 26 ft. long, with a row of 32 tuyeres and a throat or outlet opposite them but near the end. This serves for charging and for the escape of the gases in blowing. Converters of the acid type, 8 ft. in diameter by 12½ ft. long, have also been relined and used in basic converting.

In operating the Pierce-Smith converter, an initial charge of 40 to 50 tons of molten matte, containing, for example, 20 per cent. of copper, is poured in and this is followed by about 3 tons of silicious ore. Blowing is then begun. When the blow is complete successive charges of 6 or 7 tons of matte and 3 tons of silicious ore are added, blowing between each charge. At the end of each blow the slag formed during the blow is poured. The molten bath finally contains a matte of about 75 per cent. copper and 5 per cent. iron. An addition of silicious ore is made, just sufficient to slag the remaining iron oxide, and the charge is blown to the stage of blister copper.

Basic converting has numerous advantages, both in cost of installation and of operating. These are (1) fewer converters for the same output, in the proportion of five to three; (2) smaller and lighter buildings; (3) omission of heavy cranes; (4) no lining department needed; (5) fewer delays in operating and lower costs; (6) more healthful conditions.

Converter Charging.—To blow fine ore into the converter through the tuyeres was attempted years ago, but by using a separate pipe and higher pressure it is now successfully accomplished. A sufficient supply can be introduced at one or two of the tuyeres to supply the requirements for silica. Lately, concentrate has been introduced in the same way, but this seems to be a rather expensive way of treatment as compared with ordinary smelting.

Leaching of Copper Ores.—Wm. E. Greenawalt has patented a hydrometallurgical process with electrolytic regeneration. It is suited to oxidized silicious ores. The ore, crushed and mixed with some salt, is leached in large vats with dilute hydrochloric acid. Cupric chloride is formed and, in the presence of other chlorides, it reacts on and dissolves silver so that we can count on an extraction of 80 to 90 per cent. The cupric solution, flowing from the vats, is next saturated with sulphur dioxide ob-

tained by roasting sulphide ore. This converts the cupric into cuprous chloride. The solution goes to electrolytic vats, where the copper is deposited at the cathode while the chlorine is liberated at the anode. The liberated chlorine is exhausted by a pump or fan and is forced into a scrubbing tower filled with coke, through which the solution trickles. Sulphur dioxide is forced upward through the tower and with the chlorine forms hydrochloric and sulphuric acids. This is the solution which is returned to the leaching vats. Both the copper sulphate and the free sulphuric acid react on the common salt of the charge so that cupric chloride and hydrochloric acid result. This cycle of solution, precipitation and regeneration is repeated indefinitely. The inventor gives the cost of plant and equipment for a 100-ton plant at $120,000 and the cost of treatment at $1.96 per ton of ore.

Disposal of Slag and Flue Dust.—The slag produced in smelting is thrown away; that from the converter contains 2 per cent. of copper and is returned to the blast furnace. One method consists in pouring it into a hopper in regulated flow with a stream of flue dust so that the two streams are mixed. There results a porous agglomerated mass which is fed without further loss to the blast-furnace. Besides this method, the flue dust may be bedded, or put in layers with other ores, then treated by one of the sintering methods. There results a sintered product quite acceptable for blast-furnace smelting.

Oil Firing of Reverberatory Furnaces.—Due to the greater and more uniform heat attained by the use of oil over coal, slags of as high as 45 per cent. silica are readily made, thus effecting a saving in basic flux otherwise needed. The use of oil is accordingly on the increase.

Roasting Copper Concentrates.—The favorite furnace is the modified McDougal. An 18-ft. furnace can roast 55 tons daily of copper concentrate containing 25 per cent. copper and 30 per cent. sulphur, at a cost of $0.22 per ton, or when roasting 50 tons at $0.25 per ton. To attain this tonnage it has been the practice to add fine concentrate on the final or lower hearth of the roaster. This, while raising the contained sulphur to 10 per cent., gave a product that upon smelting in the reverberatory, still yielded a matté of 47 to 50 per cent. A further reason for the addition was that flue-dust loss was decreased.

Electrolytic Refining.—It is to be borne in mind that the object of electrolytic refining is two-fold, first to produce a pure copper, and second to separate the gold and silver always to be found in the blister copper treated. Blister copper, as it comes to the refinery, is too rough and uneven to be put in the electrolytic bath; it must accordingly be remelted and smoothly cast. The tendency of late is to enlarge the capacity of these reverberatory casting furnaces so that they now melt 400,000 to 500,000 lb. per charge. Because of increased size the furnace bottom must be stronger and more durable. The latter object is attained by imbedding in the hearth a grillage of 2½ to 3 in. pipes, through which air is forced to cool the bottom. To charge so large a furnace, hand methods are too slow, and a charging machine, such as is used at the open-hearth steel furnace, has been developed. The anodes, piled on the floor, are taken, a pile at a time, and placed within the furnace; the pile is then held while the charging blade is withdrawn. This method cuts down the time of casting from five hours to one-half that period, and shortens the cooling time of the furnace. It also saves expensive labor.

Capacity of Refineries.—During the six years to 1910, the output of refineries has increased 80 per cent. This has been due in part to the installation of additional tanks and increase of plants, but also to improved practice. Thus, where anodes were formerly 3 ft. by 2 ft. in size they are cast now 3 ft. square. Again, where a current of 16 to 17 amps. per sq. ft. of area prevailed, this has now been increased to 20 to 21 amps. To decrease resistances and increase output, it pays to heat the electrolyte to a temperature of 130° F.,

while the most economic composition is 14 per cent. copper sulphate and 14 per cent. sulphuric acid ($H_2S\ O_4$). To prevent the separation of the electrolyte into light and heavy layers, it should be stirred and circulated from tank to tank. On the other hand, this tends to stir up the anode mud, making the solution cloudy. Thus, some of the silver-bearing sediment may settle on the cathode and silver may be lost. To avoid this, experiments have been made with a thin wood diaphragm between the anode and cathode in the electrolytic bath. A good deal of difficulty has been encountered in obtaining a suitable diaphragm, but the experiments are still in progress.

Leaching Copper Ores in Place.—The practicability of the recovery of copper from ore that still stands in place in the mine has been recently discussed. There are conditions where this can be done to advantage. These are:

(1) The copper-bearing ores should exist as sulphides; for example, as pyrite carrying chalcopyrite ($CuFeS_2$), covellite (CuS), or better chalcocite (Cu_2S).

(2) The vein, lode or ore body should be 25 or more feet in width.

(3) The property should have been well opened up by shafts and drifts, or putting it in another way, where we have a mine which has already been exploited and where low-grade ore is left standing. A good supply of water must be available. This is run into the workings, the water taking up copper sulphate which has formed by contact with air and moisture. This dilute solution is then run through tanks containing scrap-iron and precipitated. If well managed, no more than 1¼ lb. of scrap or pig iron is needed to deposit 1 lb. of copper.

GOLD AND SILVER

CHARLES H. FULTON

Production.—According to the most recent complete statistics there were produced in 1910 throughout the world 22,537,358 oz. of fine gold and 233,650,312 oz. of fine silver. Gold and silver are closely associated in ores, and strictly speaking there is no such thing as an ore containing gold only, or silver only. Most precious metal ores contain both metals, but will be known as gold or silver ores, dependent upon which metal preponderates when measured by the standard of value. Thus, Black Hills, S. D., Potsdam *gold* ores mined during the year contained as an average 0.40 oz. gold and 2 oz. silver per ton. It will be noted that by weight there is four times as much silver as gold, but when measured by value there is eight times as much gold as silver. Gold and silver are also recovered from copper and lead ores, and from complex sulphide ores containing lead and zinc.

The gold ore of lowest grade mined and treated during the year was that of the United-Alaska Mines, of Douglass Island, Southeastern Alaska. The ore contained $2.43 gold per ton, of which $2.11 was recovered, at a total cost of mining and milling of $1.276 per ton. The highest grade gold ore, regularly mined and treated during the year, was that of the Goldfield Consolidated Mine, at Goldfield, Nev., which contained as an average $40.72 per ton. From the ore $38.27 per ton was recovered at a cost $9.20 per ton for mining and milling. Both examples represent large mines and the application of the most advanced practice in the art of mining and metallurgy.

The world's yield of gold and silver was produced by the following processes:

(1) Placer washings and dredging operations—gold only (chiefly in Alaska and California).
(2) Milling operations:
  (a) By amalgamation, cyanidation, and fine concentration. Any two or all combined as a suitable process—gold and silver.
  (b) Cyanidation alone—gold and silver.
  (c) Chlorination—gold only.
(3) Smelting operations:
  (a) Copper smelting—gold and silver recovered as a by-product in the electrolytic refining of copper.
  (b) Lead smelting—gold and silver recovered as a by-product in the refining of work-lead.

About 80 per cent. of the world's gold is now produced by milling operations and about 20 per cent. by washing and smelting operations. About 25 per cent. of the world's total production of gold is directly due to the application of the cyanide process.

Approximately 25 per cent. of the world's silver is produced by milling operations, chiefly by the cyanide process, and about 75 per cent. is produced as a by-product in lead and copper smelting.

Examples of Present Milling Practice.—Considerable progress has been made in increasing the percentage of recovery of the precious metals from their ores and in reducing the working costs. While a few years ago an 80 and 85 per cent. recovery was considered good in milling practice a comparison with the following recoveries for the year will show the advance made: Goldfield Consolidated, 93.98 per cent.; Homestake Mine, S. D., on $3.50 ore, 92 per cent.; Tonopah Mining Co., Nev., on $20.00 silver ore, 92.40 per cent.

Everywhere effort is being made to reduce loss in the waste tailings and to put into practice ideas of conservation. This has been accomplished at the same time that working costs have been reduced as the following six-year record from the Liberty Bell Mill at Telluride, Colorado, will show:

	Total Milling Cost.
1906	$2.17
1907	1.92
1908	1.75
1909	1.55
1910	1.60
1911	1.48

The Liberty Bell mill as operated for 1911 represents advanced practice in the milling of a difficultly treatable gold-silver ore. The ore as mined is crushed in coarse crushers and conveyed to the mill storage-bins. These feed the ore by means of suspended challenge feeders to eighty 850 lb. stamps, the ore being crushed in very dilute cyanide solution. The finely crushed pulp and solution then flow over amalgamated copper plates in front of the stamp batteries, the "free" metallic gold being caught on these plates and recovered as amalgam. About 50 per cent. of the ore value is thus caught. From the plates the pulp flows to the first set of inverted-cone classifiers, the apex discharge from which is called "sands" and the peripheral overflow from which is called "slimes." The sands or coarse, gritty portion of the ore pass to Wilfley concentrating tables, which separate out the heavy sulphide mineral particles containing values not readily recoverable by amalgamation or further treatment with cyanide solution, while the rest of the pulp flows from the tables to the second set of cone classifiers, which again separate the pulp into sands and slimes. The sands pass to tube mills, long revolving cylindrical mills, filled with pebbles, grinding the sands to an impalpable slime in order further to expose any minute particles of precious metals enclosed within the gangue of the ore. This finely ground slime is then allowed to flow over a second set of amalgamated copper plates to recover newly liberated "free" gold. The slimes overflow from the first set of cone classifiers, also pass over a set of Wilfley tables to separate out sulphide concentrates, and then pass to join the overflow from the second set of cones, the whole of these mill slimes passing to Dorr thickening tanks, at which point the real cyanide treatment begins. These tanks thicken the slimes pulp into a thick sludge, removing a large part of the cyanide solution present, which is then again used in the stamp batteries. The sludge passes to Hendryx agitator tanks, a number of which are placed in series. In these tanks the slimes are most thoroughly agitated with fresh cyanide solution to dissolve what precious metals remain. From the agitator tanks the sludge passes to Moore vacuum filters, which make a separation of the solution carrying the dissolved gold and silver from the now practically valueless ore sludge, which is discharged as tailings. The solution is collected in tanks and then passed through zinc thread in the precipitation boxes, the gold and silver precipitating on the zinc. The zinc precipitates are refined by treating with sulphuric acid, the gold and

silver residue from the treatment being melted into bullion. The solution coming from the zinc boxes is known as "barren" solution. It is strengthened by the addition of fresh cyanide and pumped into storage tanks to be used again in the stamp batteries.

Application of New Methods.—The Clancy cyanide process proposes to employ calcium-cyanamide, an electric furnace product, as a solvent for the precious metals instead of the more expensive alkaline cyanides at present used. The cyanogen in calcium cyanamide is made available for solution purposes by employing electrolysis, induced by suspending inert electrodes such as fused magnetite and iron, connected to the current, in the solution tanks. In addition to the cyanamide, crude iodine may be added to the solution in the case of ores containing difficultly soluble gold and silver minerals, to form cyanogen iodide, which in conjunction with alkaline cyanide acts as a powerful solvent for such minerals as telluride of gold, which is insoluble in plain alkaline cyanides. By the action of electrolysis and in the presence of thiocyanates, always found during cyanide treatment of ores containing sulphur, the expensive iodine is continuously regenerated, thus doing away with the objections heretofore advocated against its use. This process is now being tried at the new Ajax mill near Victor, Colo., and its results are being watched with interest by gold metallurgists.

Most of the United States mints are replacing the old methods of refining gold and silver bullion by acid parting by the modern electrolytic refining methods, wherever the nature of the bullion permits it. At the San Francisco mint all bullions containing more than 200 parts of precious metal per 1,000 parts are refined by electrolysis. The bullions containing silver and gold are mixed and cast into anode plates containing about 600 parts silver, 300 parts gold and 100 parts base metal, such as copper. These anodes are suspended in earthenware vessels or "cells" in a solution or "electrolyte" of water containing 3 per cent. silver as nitrate and 1.5 to 2.5 per cent. of free nitric acid and a little glue. Between each pair of anodes is suspended the "cathode," or sheet of thin pure silver. The anode and cathode are connected to the positive and negative poles, respectively, of an electric circuit. The anode dissolves, its silver depositing as pure crystalline silver on the cathode, while the gold is left as a sponge in the anode. These spongy anodes are then further refined by a similar method as for silver, the product being a pure gold.

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LEAD

H. O. HOFMAN

Lead Oxide.—The reduction of lead oxide by carbon monoxide has been believed to take place at about 260° C. In the *Brooklyn Polytechnic Engineer* (1910, x, p. 72), Fay-Seeker-Lane-Fergusion publish the reduction temperatures of some metallic oxides upon which they experimented; thus lead oxide is reduced by carbon monoxide at 160° C., by hydrogen at 190°, by ammonia at 299°, and methane at 210°.

Lead Silicate.—The constitution of lead silicates has been the object of some research. The latest is that of Hilpert and Nacken (*Ber. deutsch. chem. Ges.*, 1910, xliii, 2565), who have traced the freezing point curve.

They have definitely ascertained the existence of the singulo silicate, Pb_2SiO_4, freezing at 740° C., but could not determine the position of the known mineral barysilite, $3PbO.2SiO_2$, although its place is shown in the curve, and they have reason to believe that there exists the compound $3PbO.SiO_2$.

Production.—The world's production of lead in 1910 was about 1,111,000 metric tons; of this the United States furnished, in round figures, 355,000; Spain, 180,000; Germany, 158,000; Mexico, 120,000 tons; next come Belgium, with 88,000; Australasia, with 80,000; Great Britain, with 32,000; the remaining 98,000 tons are furnished by nine other countries.

Types of Smelting Furnaces.—Of the three forms of furnaces in which lead ores are smelted, the ore hearth, the reverberatory furnace, and the blast furnace, the last greatly predominates over the other two. The ore hearth, when connected with filtration of fumes, holds its own with non-argentiferous ores; the reverberatory furnace, a few years ago of much greater importance than the ore hearth with galena ores whether silver-bearing or not, has lost ground steadily, so that it has about been given up even in Belgium, one of its former strongholds.

Blast Roasting.—This process of roasting and agglomerating in a single operation finely-divided sulphide ore by forcing air through it, has considerably changed the ordinary practice of lead-smelting. It has been the leading cause for the diminished use of the reverberatory furnace in the smelting of galena ore. Hofman (*Eng. Min. Jl.*, 1911, xci, 48) has summarized the theory of the process and the conditions that have to be fulfilled for its successful operation. The older theories which presupposed special reactions to take place are put aside, and the whole is shown to be nothing more than a forced ordinary roast in which a large volume of air is brought into contact with the small glowing galena particles, held apart from one another by admixed other materials. It drives off the sulphur dioxide as soon as formed, and prevents the formation of sulphate; at the same time, it causes the oxidation to proceed with such a velocity that the heat generated becomes sufficiently high to cause the lead oxide formed to sinter together with the accompanying gangue or added flux. The conditions for successful work are that the sulphur dioxide formed be withdrawn as soon as formed, that the oxidation be sufficiently rapid to cause agglomeration, that the flux added as diluent be of the right chemical composition to form a satisfactory sinter, and have the proper specific heat to absorb any excess heat generated during the roast; that the size of ore and flux particle be rightly chosen; and, in general, that the manipulation be carried out in a suitable manner.

While blast-roasting has been confined so far to sulphides, Guillemain (Hahn, *Eng. Min. Jl.*, 1911, xci, 858) has successfully used it with speiss, the metallic arsenide produced in the smelting of arsenical lead ores. This new mode of operating is especially welcome at present, when lead smelteries treat the arsenical silver-bearing cobalt ores from Cobalt, Ont., and can not avoid making considerable amounts of speiss.

The Dwight-Lloyd sintering machines (Jacobs, *Met. & Chem. Eng.*, 1911, ix, 405) have been introduced at the works of the Consolidated Mining and Smelting Co. of Canada, Trail, B. C., to blast-roast both lead and copper ores preparatory to smelting in the blast furnace. They treat 200 tons of ore in 24 hours with three men on a shift, and require about 75 h. p., i. e. 30 h. p. for each of the exhaust fans and 15 h. p. for the remainder of the plant. The fans are run at 850 r. p. m. and produce a vacuum of from 10 to 11 in. of water. This smelting plant has so far blast-roasted its fine ore by using the Huntington-Herberlein process.

The Ore Hearth.—Brown (*Tr. Am. Inst. Min. Eng.*, June, 1911) discusses some of the economic features of smelting in the hearth furnace at the works of the Granby Mining & Smelting Co., Granby, Mo., where galena concentrates, with sintered blue and white fume from the filter bags, are smelted, while the gray slag, freed from lead as much as possible, is sold for the recovery of the remaining

values. The furnace is 5 ft. wide, and has an air-jacket; bituminous coal is used instead of charcoal. In six months there were treated 9,016,000 lb. of ore, containing 7,153,311 lb. of lead, at a cost of $2.4332 per ton. The recovery of lead in the form of pig lead was 84.301 per cent., of white fume 10.355 per cent., of blue fume 2.691 per cent., and of gray slag 2.653 per cent. White and blue fume are returned to the ore-hearth, gray slag is sold.

The Blast Furnace.—The Midvale Plant of the United States Smelting Co. at Bingham Junction, Utah, is described by Palmer (*Min. Wld.*, 1911, xxxiv, 1023, 1075). The ore, raw or blast-roasted, is smelted in six blast furnaces, 45 by 160 in. at tuyeres, of which there are 10 to a side, 3.5 in. diameter. The smelting capacity of a furnace is 200 tons charge in 24 hours. The slag made contains SiO_2 37, FeO 27, CaO 22, ZnO 6, Pb 0.50-0.75 per cent.; matte I, containing Cu 7-10, Pb 12-15, Fe 21-23, Zn 3-6, S 21-24 per cent., is crushed, roasted and concentrated in a blast furnace to matte II with Cu 40 per cent.; and the second matte after crushing, roasting and smelting in a reverberatory furnace yields matte III with Cu 80 per cent. and slag assaying SiO_2 39, FeO 13, Pb 17 per cent. The blast furnace gases are filtered in a baghouse, and the fume recovered is worked for white arsenic in a separate department.

Smelter Smoke.—The smoke issuing from lead and copper smelting plants consists of suspended particles and of gases. Many methods exist of settling the former and for rendering harmless the latter. Electrical precipitation of suspended particles has received much attention from Cottrell (*Min. Scien. Press*, 1911, ciii, 255, 286). His process consists in applying a high-tension intermittent direct current to a system of needle-point and plate-form electrodes in a gas flue, when the air-space between the poles becomes highly charged with electricity of the same sign as that of the needle-point. Any body floating through this space receives a charge of the same sign and is attracted to the plate of opposite charge; it moves at a rate which is proportional to its charge and the potential gradient between the point and the plate. The process has been in successful operation at the Selby lead works near San Francisco, Cal., where the roaster and blast-furnace stacks discharge over 50,000 cu. ft. of gas per minute. The dust is carried down, and the sulphuric acid collected more than pays for the cost of operating.

The ordinary method of disposing of smelter smoke is to allow it to pass off into the open from an elevated point through a high chimney, with the hope that when the dust and acid particles come down again to the earth they will be so dispersed as to be harmless to animal and vegetable life. The law suits between industrial and agricultural representatives and the closing down of important smelting plants show that the usual method of disposal of smelter smoke does not fulfil ordinary requirements. The Wislicenus smoke dissipator (Austin, *Mines and Methods*, 1911, ii, 269; Hahn, *Eng. Min. Jl.*, 1911, xcii, 596) appears to solve in a simple manner the distribution of smoke in such a way as to make it harmless. It consists in providing the upper part of a stack with a large number of openings so that the smoke will not leave the throat in the form of a single stream, but be diluted with air and leave in the form of many streamlets, separated by air. The wind striking the perforated part of the chimney at one side, some of the air will enter and dilute the gases and leave with them at the opposite side. The uniting of air and gases is assisted by the formation of eddy-currents. The great advantage of the device is that it is automatic and requires no supervision.

Desilverization.—No changes or improvements have been recorded during the year in this branch of the metallurgy of lead.

Bibliography.—H. P. Collins has brought out a second edition of *The Metallurgy of Lead and Silver; Part I. Lead.* (Philadelphia, Lippincott, 1910, pp. 538.) The first edition, 1899, with 368 pages, was welcomed upon its appearance. The general plan of the new edition is the same as that of the first; a great many additions have been made, but too few

excisions. Explanations of metallurgical phenomena by the use of freezing-point curves might have found more recognition.

ZINC

W. R. Ingalls

Production and Consumption.—The zinc industry in 1911 was prosperous, especially in the latter part of the year, when prices rose materially above what may be considered a normal average. This was due to a demand for zinc, both in Europe and America, which strained productive capacity to the utmost. It was foreseen a year previous that this was likely to occur in the United States, where the diminishing supply of natural gas at certain smelting centers in Kansas augured an insufficient smelting capacity. Something similar happened in Europe, where the convention among the smelters had, in Nov., 1910, been renewed for a further period of 3¼ years, with the idea that it was still necessary to control production. As the market developed in 1911, however, it proved that there was not sufficient smelting capacity to afford easy supply to the consumptive demand, and as in the United States unsold stocks became non-existent.

Ore Supplies.—A bountiful supply of ore being available smelters realized larger profits than in several years previous. European smelters received increasing supplies of ore from Broken Hill, New South Wales, while the discovery of large deposits of calamine at Leadville, Colo., and the development of important mines of blende at Butte, Mont., together with augmented offerings of ore from other sources have relieved American smelters from their dependence upon the Joplin district and put them in a comfortable position.

New Smelting Plants.—Noteworthy events of 1911 were the inauguration of zinc smelting by the Broken Hill Proprietary Co. in New South Wales, which has provided itself with a plant of considerable capacity; and the beginning of zinc smelting, on a small scale, in Japan. The operation of these plants will be watched with interest. Zinc smelting is more dependent upon the human factor than are many other branches of metallurgy, and for this reason has been chiefly confined to the districts in Silesia, Rheinland, Belgium, Great Britain and the United States where a working population trained in the art through several generations of practice has become established. The successful prosecution of zinc smelting at new and remote places has generally been a tedious development, although of course by no means impossible.

In the metallurgy of zinc there was no radical change in 1911. Several new works were started in the coal fields of Illinois, bearing out previous forecasts respecting the destiny of that state as a zinc-smelting center, but two new plants were also built in the gas fields of Oklahoma. Smelteries to use natural gas as fuel are relatively cheap and quick to construct, but must be figured on a short duration of fuel supply. Smelteries using coal are more costly, but more permanent. Economic considerations make it necessary that they be provided with a department for the manufacture of sulphuric acid from their roast-gas. This also is the general practice in Europe.

Smelting Furnaces.—In all modern coal smelteries the distillation furnaces are of the regenerative type, either reversing or counter-current. In recent years the latter has increased in use. It has certain distinct advantages, but has not generally been considered so economical of fuel as the other system. However, that particular, in either system, is governed largely by the proportions of the furnace, and some excellent results have been reported of counter-current furnaces. As to the form and arrangement of the retorts, European practice tends toward the Rhenish system; American toward the Belgian. Among American works using natural gas the Iola type of furnace still prevails, in spite of certain disadvantages. At Cherryvale, where furnaces of the Belgian type were originally in-

stalled, it was possible to adapt them to firing with petroleum when the supply of natural gas failed, but other smelters in Kansas have been able to use petroleum only in connection with their roasting furnaces.

Electrometallurgy.—Much attention was given in 1911 to the development of electric furnaces for zinc smelting and some optimistic reports were made to the effect that previously baffling difficulties had been overcome. It was authentically reported that commercial ore smelting had been accomplished at Sarpsborg and Trollhättan, in Scandinavia, and that the capacity of those works is to be enlarged. In spite of this it must be pronounced that electric zinc smelting is absolutely in its infancy and it is impossible yet to say definitely that certain metallurgical obstacles have been surmounted, much less that the electric-smelting process will offer any commercial advantage.

Pyrometallurgical Concentration.—A good deal of attention was devoted in 1911 to what may be called the pyrometallurgical concentration of zinc ore by burning off the zinc after the fashion of the Wetherill process, but without the refinements that are necessary when the oxide is to be collected for use as a pigment. Such a process of concentration may find a useful field in the treatment of ores and metallurgical products that are not amenable to mechanical concentration, and consideration of this possibility has been inspired by the success of Pape in extracting zinc from the slags of Oker, in Germany. Among others who have been experimenting on this line are Babe, Blum, Hommel and Witter. Some useful developments may be expected under favorable conditions.

Hydrometallurgy.—Several hydrometallurgical processes for zinc extraction were exploited in 1911, one of them rather extensively, but none of these commanded any very serious attention among metallurgists in general, although an elaborate plant for the exploitation of one of these processes is being erected in Tasmania.

Metallurgical Progress.—While the standard method of zinc smelting is frequently pronounced to be quite backward by metallurgists who have but recently become interested in zinc-ore treatment, it is not so regarded by those who are well versed in the art. Many improvements in details have been made, and are constantly being made, with the results of decreased cost of operation, increased extraction of metal and ability to handle successfully ores of considerable impurity. High percentages of lead and iron have ceased to have terrors. Silver and lead contents can be recovered either by smelting the entire residue from zinc distillation or by subjecting it to mechanical concentration and smelting the concentrate. The choice between these alternatives depends simply upon commercial conditions. Available ore supplies are constantly being increased by improvements in the art of mechanical concentration. The art of zinc smelting is also far from standing still.

PHYSICAL PROPERTIES OF METALS AND ALLOYS

JAMES S. MACGREGOR

During the past year many additional data relative to the physical properties of metals and alloys have been produced. The development of research along these lines is due to increased facilities in the nature of laboratory equipment, as well as the inauguration in recent years of research laboratories in many of our industrial concerns. Further, the demands of the engineer for materials having various properties for specific purposes are greater than ever, and are an incentive to experimentation along these lines. The development of the aeroplane and automobile, for example, has had a remarkable influence in bringing about investigations on alloy steels.

Abrasion.—Abrasive qualities are

very important where materials are subjected to the rubbing or wearing action of machine parts. Experiments to ascertain the effect upon abrasive qualities of the addition of various elements to steel and cast iron have been conducted.

Titanium in Steel.—The addition of titanium to steel indicates a marked influence of this element upon the resistance to abrasion of the steel to which it has been added. Titanium steel is tough, has a high tensile strength and is quite ductile. Because of its wearing qualities it is being used to a great extent in the manufacture of rails.

Vanadium in Cast Iron.—George L. Norris has studied the effect of the addition of vanadium to cast iron. He states that the effect of the addition of this element is to expel oxygen and nitrogen, to make the elements of the casting more coherent and to increase the wearing qualities of the crystalline structure. Further, the structure shows less tendency to break along cleavage planes. The strength of cast iron is increased from 10 to 25 per cent.

Vanadium has been added to cast iron used in the manufacture of locomotive cylinders, and these cylinders have shown only microscopic wear after the locomotive had run 200,000 miles. Cylinders made without the addition of vanadium to the iron showed a wear of 1/32 in. when the locomotive in which they were used had covered 100,000 miles.

Corrosion.—Investigations concerning the relative corrosion of iron, steel and special metals have been given considerable attention by engineering societies during the past year. The problem is an extremely important one, as the life of various structures depends either upon the ability of their metallic parts to withstand corrosive action, or upon the application of external coatings to check its rapidity.

Various methods have been devised to accelerate the corrosion of metals in order that their relative merits may be determined in a short time. C. H. Chapman, in a paper before the American Society for Testing Materials (1911), reported tests showing the relative results obtained from weather-exposure tests and sulphuric-acid tests, the latter being an accelerated test. These tests were made upon common steel and improved iron. Both materials were exposed to the same weather conditions for 18 months and each showed practically the same amount of pitting at the end of that period. The results of the acid test showed a loss in weight of 6.7 per cent. for the common steel and 0.83 per cent. for the improved iron. Mr. Chapman concludes that the acid test may be misleading and consequently care must be taken in interpreting results. Prof. W. H. Walker at the same meeting delivered a paper on "The Effect of Copper in Iron on Acid Corrosion Tests." The results of numerous tests showed that the addition of very small amounts of copper (0.20 per cent.) to open-hearth steel reduced its loss in acid as much as 30 times. Tests upon very pure steel with copper added gave similar results. The presence of copper in iron or steel seems, from recent evidence, to have a marked influence in retarding corrosion. A particularly striking instance of this was brought out by Prof. A. P. Miller, who tested and analyzed some of the links from an old suspension bridge at Newberryport, Mass. This bridge had been standing some one hundred years. It was noted that some of the links showed very little corrosion, while others were quite badly corroded. Analysis proved that all links which were but slightly corroded contained small percentages of copper.

Prof. Ira H. Woolson (*Eng. News*, vol. xxvii, pp. 590-593) reports the results of an investigation on the corrosion of some 80 samples of wrought iron and steel pipe taken from the public bath houses, New York City. A great deal of the pipe used in the hot-water systems has to be replaced after a period of service of less than three years. Wrought iron and steel were about equally corroded.

Duralumin.—The results of a series of tests by L. M. Cohn (*Electrochem. Zeit.*, Apr. 27, 1911) are interesting. He finds that the addition to aluminum of 0.5 per cent.

magnesium, 3.5 to 5.5 per cent. copper, and 0.5 to 0.8 per cent. manganese showed very marked effects upon the strength, ductility, hardness, and resistance to corrosion of the metal. The following is a summary of the physical properties of the alloy.

Shearing Strength, lb. per sq. in.	42,700
Tensile Strength, lb. per sq. in.	71,200
Modulus of Elasticity	10,000,000
Specific Gravity	2.8

The hardness of the alloy is three times that of pure aluminum. It is stated that this material is used by the British Army in the construction of airships. The values of strength coincident with extreme lightness are quite remarkable.

Expansion of Nickel Steels.—Steel containing high percentages of nickel has an extremely low coefficient of expansion. This fact should make its use in the manufacture of instruments of precision widespread. C. E. Guillaume (*Comptes Rendus*, Vol. CVII, pp. 189) has during the past year determined the coefficient of expansion of steel containing varying percentages of nickel. The results show a minimum expansion for a nickel content of 36 per cent. The coefficient for this percentage is only one twenty-eighth that of ordinary steel.

Effect of High Temperatures on Cast Steel.—Experiments have been conducted both abroad and in this country relative to the effect of high temperatures upon steel and cast iron. Up to the present year, however, no data were obtainable relative to the effects of high temperature on cast steel. Experiments conducted by Messrs. Perrine and Spencer under the direction of the Testing Laboratory, Columbia University, throw light upon this subject. The following table gives a summary of the results obtained:

Temperature, Degrees F.	Elongation, in.	Ultimate strength, lb. per sq. in.
75	27.3	81,310
400	25.8	73,180
600	26.5	77,930
800	31.1	63,520
1000	49.0	36,450

A perusal of the results shows a slight decrease in strength at a temperature of 400° F., a marked recovery at 600° F., and then a gradual falling off for further increase of temperature. The results are of considerable importance because of the use of steel castings for steam fittings, etc.

XXIV. MANUFACTURES

WILLIAM M. STEUART

General Condition During the Year.—While the annual manufactured output of the United States is now greater than at any other period in the history of the country, the advance has not been constant. There have been periods of no progress, and, in fact, of some retrogression. The year 1911 has not been one of pronounced activity. While it is probable that the production exceeded that of 1910, the volume of products was much below the producing capacity of the factories. Signs of world unrest which were constantly appearing caused disturbance in international markets and retarded activity in the United States. The tendency during recent years to enlarge capitalization in all branches of industry was retarded by the attitude of the government in regard to industrial combinations. The year opened with a pronounced depression in many lines of industry, though conditions gradually improved as the year advanced. The decision of the Supreme Court in one of the important cases involving the anti-trust law assisted in the general improvement, but a satisfactory condition of activity was not attained at the close of the year. According to the reports of the commercial agencies there were 9,944 failures in the first nine months of 1911, with liabilities aggregating $138,865,620, as compared with 9,399 in the first nine months of 1910 with liabilities of $154,417,304. During the nine months of 1911 there were 2,544 failures in manufacturing industries, with liabilities of $61,333,505. In the first quarter of 1911 the failures in manufactures numbered 952 and liabilities $23,539,177. There was a decided decrease in the number and liabilities for each succeeding quarter. In the third quarter the business failures numbered 751 and the liabilities $15,772,093. (See also XIII, *Economic Conditions and Conduct of Business.*)

Magnitude of the Manufacturing Industry.—The figures for the federal census of manufactures, which covers the year 1909, were published during the year. They show that the capital invested, persons employed, and value of products of the manufactures of the United States were much greater than at any previous period in the history of the country.

STATISTICS OF MANUFACTURES, 1909

	Census.		Per cent. of increase, 1904 to 1909.
	1909.	1904.	
Number of establishments	268,491	216,180	24
Capital	$18,428,270,000	$12,675,581,000	45
Cost of materials used	$12,141,291,000	$8,500,208,000	43
Salaries and wages, total	$4,365,613,000	$3,184,884,000	37
Salaries	$938,575,000	$574,439,000	63
Wages	$3,427,038,000	$2,610,445,000	31
Miscellaneous expenses	$1,945,676,000	$1,453,168,000	34
Value of products	$20,672,052,000	$14,793,903,000	40
Value added by manufacture (products less cost of materials)	$8,530,761,000	$6,293,695,000	36
Employees:			
Number of salaried officers and clerks	790,267	519,556	52
Average number of wage earners employed during the year	6,615,046	5,468,383	21
Primary horsepower	18,680,776	13,487,707	39

The number of establishments includes all that were operated under the factory system at any time during the respective census years. The gross value of products, reported for these establishments includes a large amount of duplication caused by the products of some establishments being used as materials in others. This duplication is eliminated by deducting the cost of materials, the remainder may be accepted as the amount added to the cost of the materials by the manufacturing processes carried on during the respective years. It is a much truer indication of the economic importance of manufactures than the gross value of products.

In addition to the establishments covered by the census, it is estimated that there are 390,000 small establishments and shops engaged in the neighborhood and mechanical industries with annual products, including amounts received for work done, of $2,890,000,000.

Porto Rico, Alaska and Hawaii.—The first enumeration of the manufactures of Porto Rico was made at this census, which also extended to Alaska and Hawaii. The statistics for this non-contiguous territory are summarized as follows:

NON-CONTIGUOUS TERRITORIES

	Total for Non-contiguous Territory.	Alaska.	Hawaii.	Porto Rico.
Number of establishments	1,591	152	500	939
Capital	$62,479,000	$13,060,000	$23,875,000	$25,544,000
Cost of materials used	$52,228,000	$5,120,000	$25,629,000	$21,479,000
Salaries and wages, total	$10,021,000	$2,328,000	$2,795,000	$4,898,000
Salaries	$2,325,000	$380,000	$686,000	$1,259,000
Wages	$7,696,000	$1,948,000	$2,109,000	$3,639,000
Miscellaneous expenses	$10,097,000	$2,006,000	$3,329,000	$4,762,000
Value of products	$95,494,000	$11,340,000	$47,404,000	$36,750,000
Value added by manufacture (products less cost of materials)	$43,266,000	$6,220,000	$21,775,000	$15,271,000
Employees:				
Number of salaried officials and clerks	1,901	245	594	1,062
Average number of wage earners employed during the year	24,585	3,099	5,904	15,582
Primary horsepower	79,910	3,975	41,930	34,005

Combining the totals for these various industries in the continental United States and the non-contiguous territory gives an aggregate of 665,268 manufacturing establishments, with a gross annual product of the value of $23,762,226,000.

Development and Distribution.—Since 1850 the capital invested in manufactures has increased from $533,245,000 to $18,428,270,000; the number of persons employed from 957,059 to 7,405,313; and the gross value of products from $1,019,107,000 to $20,672,052,000. During the decade ending with 1909, the actual amounts of increase were greater than for any prior 10-year period. In 1850 manufactures were largely concentrated in the New England and Middle Atlantic states, which reported about 75 per cent. of the products for the United States. In 1909 the products of these states formed 47 per cent. of the total, the largest proportion, 60 per cent., being reported for the Middle Atlantic and the East-North-Central divisions. During the past decade the greatest amount of increase for the different states in the gross value of product occurred in New York, where the value increased from $1,871,831,000 to $3,369,490,000, an increase of $1,497,659,000. The largest percentages of increase are shown for the newly developed western states, rising as high as 284 per cent. in Nevada, where large establishments engaged in the smelting and refining of the precious metals have been established during recent years.

GEOGRAPHICAL DISTRIBUTION OF MANUFACTURES

Geographic Division.	Year.	Number of Establishments.	Average Number of Wage Earners.	Value of Products.	
				Amount (in thousands).	Per cent. of Increase.
United States	1909	268,491	6,615,046	$20,672,052	39.7
	1904	216,180	5,468,383	14,793,903	29.7
	1899	207,514	4,712,763	11,406,927	
New England	1909	25,351	1,101,290	2,670,065	31.8
	1904	22,279	940,752	2,025,999	22.0
	1899	22,576	851,903	1,660,348	
Middle Atlantic	1909	81,315	2,207,747	7,141,761	36.9
	1904	67,699	1,886,565	5,218,266	28.1
	1899	65,834	1,604,844	4,074,719	
East-North-Central	1909	60,013	1,513,764	5,211,702	44.6
	1904	51,754	1,224,528	3,605,368	26.4
	1899	50,521	1,073,322	2,853,056	
West-North-Central	1909	27,171	374,337	1,803,899	40.4
	1904	21,492	312,361	1,284,446	32.0
	1899	20,732	266,051	972,969	
South Atlantic	1909	28,088	663,015	1,381,186	41.8
	1904	19,564	522,611	974,028	36.8
	1899	19,144	458,344	711,799	
East-South-Central	1909	15,381	261,772	630,488	35.8
	1904	10,311	221,229	464,336	42.8
	1899	10,058	177,208	325,086	
West-South-Central	1909	12,339	204,520	625,443	50.6
	1904	8,279	143,470	415,232	64.6
	1899	7,174	113,388	252,314	
Mountain	1909	5,254	75,435	363,996	42.9
	1904	3,610	52,790	254,663	32.8
	1899	3,146	44,497	191,826	
Pacific	1909	13,579	213,166	843,512	52.9
	1904	11,192	164,077	551,565	51.2
	1899	8,329	123,206	364,810	

Capital.—The capital reported for manufactures in 1909 amounted to $18,428,270,000, an increase of 45 per cent. over the $12,675,581,000 for 1904. Neither of these totals include the value of hired property. Many important factories are rented by the operating companies, and the inclusion of their value would largely increase the amount of capital. The principal manufacturing establishments are now operated under the incorporated form of ownership, and the capitalization often depends upon the par or market value of the stock and bonds. Corporations are frequently engaged in mercantile pursuits, transportation and other branches of industry, as well as manufactures, and when one capital account covers all enterprises it is impossible to obtain an accurate separation. Therefore, the statistics of capital are not reliable, as in some instances they do not represent the entire investment, while in others they contain values that are not employed in manufactures.

Salaries and Wages.—The official statistics indicate that in the total for all branches of manufactures the amount paid annually in salaries and wages has increased more rapidly than the number employed. The annual salary and wage payments in manufactures amounts to $4,365,613,000 for 1909, and of this amount $938,575,000, or 21 per cent., was salaries and $3,427,038,000, or 79 per cent., wages. Since 1904 the salaries have increased by $364,136,000, or 63 per cent., and the wages by $816,593,000, or 31 per cent. The constant change from the private to the corporate form of ownership and the organization of large enterprises has greatly increased the number of salaried employees and the amount paid annually in salaries.

Persons Engaged.—Including employers, employees, and officers of corporations, there were 7,678,578 persons engaged in the manufacturing industries of the country during 1909. Of this number, 273,265 were proprietors or members of firms,

80,735 officials of corporations, 133,173 superintendents and managers, 576,359 clerks, stenographers, salesmen and other salaried employees, and 6,615,046 wage earners.

Constancy of Employment.—The 6,615,046 wage earners represent the average number that would have continuous employment during the year 1909. It is computed by dividing the total of the numbers employed on a given day of each month by 12. At times there was a much larger number employed. During November there were 7,006,853, and it is probable that the height of employment was reached during this month. The minimum number, 6,210,063, was returned for January. The variation in the number employed was 11.4 per cent. During 1909 there was a constant increase in the number employed each month from January to November; the only exception to this gradual increase was a slight retrogression in July. Considering the entire country the figures indicate a satisfactory degree of constancy of employment. Stability of employment is a feature of the well established factory industries, such as the textile mills and boot and shoe factories.

The cotton mills gave employment on the average during the year to 378,880 wage earners; the greatest number, 383,529, was reported for December, and the smallest, 374,433, for January, there being a variation of only 2.4 per cent.

For the woolen and worsted industry there was an average of 168,722 wage earners; the largest number, 173,943, was reported for November, and the smallest, 158,318, for January, the variation being 9 per cent.

In the boot and shoe industry there was an average of 198,297 wage earners; the largest number, 207,452, were employed in December, and the smallest, 190,382, in May, the variation being 8.2 per cent.

The manufactures that show the greatest variation in the number employed are the canning and preserving of vegetables and fruits and similar industries that are seasonal in character. There was an average of 59,968 wage earners employed in the canning industry; the largest number, 154,800, was reported for September, and the smallest, 19,998, for January. The largest exceeded the smallest by 134,802, there being a variation of 87.1 per cent. in the number employed.

The cottonseed-oil mills that depend upon the cotton crop for their raw material naturally show a great variation in the number employed. There was an average of 17,071 wage earners reported for the industry in 1909. The largest number, 29,334, were employed in November, and the smallest, 5,174, in July, there being a variation of 24,160, or 82.4 per cent. in the employment.

The manufacture of ice is now an important industry in most states and gives employment on the average during the year to 16,114 wage earners. The largest number, 22,872, was reported for July, and the smallest, 9,847, for January, there being a variation of 13,025, or 56.9 per cent., for the different seasons of the year.

Industries Employing Greatest Number.—Of the various industries the greatest number of wage earners are employed in the manufacture of lumber and timber products. This includes the timber camps, saw and planing mills, lath, cooperage stock, sash, door, blind, and box factories. These industries give employment to 695,019 wage earners during the year. The height of employment in 1909 was reached during November, when there were 739,160 wage earners; the minimum number, 649,239, was reported for January.

Foundry and machine shops are the second most important industry from the standpoint of employment. There were on the average 531,011 wage earners reported for it in 1909. The largest number, 597,234, were reported for December, and the smallest, 482,080, for January.

Cotton factories rank third in the number of persons employed, the average number of wage earners being 378,880, and, as explained, there was great regularity in their employment.

Repair shops of the steam railroads is the fourth most important industry in this respect, the average

number of wage earners being 282,174. The greatest number, 301,538, were employed in December, and the smallest, 268,700, in May. There was a variation of 11 per cent.

Printing and publishing is the only other industry that gives employment to more than 250,000 wage earners on the average during the year. The average number for 1909 was 258,434; the greatest number, 269,884, were employed in December, and the smallest, 251,757, in July, the variation in employment being only 6.8 per cent.

Power.—The power of the steam engines, water wheels, electric motors and other primary power generating units employed in the manufactures of the United States in 1909 was 18,680,776 h. p. In 1904 it was 13,478,707, and in 1899, 10,097,893 h. p. The increase in electric power has been the striking feature of the past decade. The power of the electric motors increased from 492,936 h. p. in 1899 to 4,817,140 in 1909. The horsepower of the steam engines increased from 8,139,579 in 1899 to 14,202,137 in 1909, and of gas and other internal-combustion engines from 134,742 to 754,083. The increase in the direct application of water power has not been so pronounced, the horsepower of water wheels increasing from 1,454,112 in 1899 to 1,807,144 in 1909.

The True Measure of Increase.—The value is the only unit of measure that can be uniformly applied in a total for all classes of products. It is not a satisfactory unit of measure, because it conveys no idea of the quantities, and is increased or reduced in conformity with the prices prevailing during the period covered.

Prices were, as a rule, at a higher level during the census year 1909 and since, than for the years covered by any recent preceding census. This must be considered in accepting the aggregate value of all products as indicating the industrial activities of the country. Necessarily the aggregate value of products for a year of high prices would be greater than for the same quantity of products during a year in which low prices prevailed.

While the great diversity of products makes it impossible to compile statistics of quantities for all branches of manufactures, the quantities are given for some of the principal products in the following statement. The uniform increase in all of these staple products of manufactures is a striking feature of the industrial progress of the country.

	1909.	1904.
Hides and skins treated in tanneries, number	146,360,586	131,011,956
Boots, shoes and slippers manufactured, pairs	285,017,181	242,110,035
Cotton consumed in textile mills, lb	2,465,230,572	1,981,801,446
Wool consumed in woolen and worsted mills, lb	474,755,366	418,703,811
Silk, raw, consumed in silk mills, lb	17,472,204	11,572,783
Carpets and rugs, sq. yd	81,218,881	82,670,843
Cotton manufactures, sq. yd	6,348,568,593	5,110,308,812
Cottonseed crushed, tons	3,827,301	3,345,370
Rough rice milled, lb	974,747,475	999,727,650
Sugar manufactured, cane and beet, tons	835,820	668,900
Flour manufactured, bbl	105,756,645	104,013,278
Salt, bbl	29,933,060	17,128,572
Ice, manufactured, tons	13,490,273	8,014,137
Automobiles, number manufactured	127,289	22,830
Cement, bbl	66,689,715	31,675,257
Window glass, 50 ft. boxes	6,921,611	4,852,315
Lumber manufactured, M ft	44,509,761	34,135,139
Wood pulp manufactured, tons	2,498,955	1,921,768
Turpentine produced, gal	28,988,954	30,687,051
Wood alcohol, refined, gal	6,276,071	4,316,346
Pig iron, tons	25,795,471	16,497,033

Basic Industries.—Food products, beverages, condiments and eatables form about one-fourth of the total value of the manufactures of the United States; textiles, clothing and kindred products about one-tenth. The other products may be broadly classified as fabrications of metal

and wood, stone and clay products, paper products, printing and chemicals.

About 79 per cent. of the raw materials consumed are the products of agriculture, about 5 per cent. the products of the forest, 15 per cent. the product of mines and about 0.5 per cent. are the products of the sea.

The raw materials are subjected to the first process of manufacture in the basic industries and the products of these industries are, as a rule, an index to the manufactures of the country. The annual production for some of these products is shown in the following statement:

	1910.	1909.	1908.	1907.
Pig iron, long tons	27,303,567	25,795,471	15,936,018	25,781,361
Copper, lb	1,080,159,509	1,092,951,624	942,570,721	868,996,491
Lead, short tons	372,227	354,188	310,762	365,166
Gold, troy ounces	4,657,017	4,821,701	4,574,340	4,374,827
Silver, troy ounces	57,137,900	54,721,500	52,440,800	56,514,700
Lumber, M ft	40,018,282	44,509,761	33,224,369	40,256,154
Wool (scoured), lb	141,805,813	142,223,785	135,330,648	130,359,118
Cotton (bales of 500 lb.)	12,005,688	10,315,382	13,587,306	11,375,461

Integration of Industries.—Specialization has been a feature of the industrial development during recent years. As a rule, the specialization that characterized the earlier development of manufactures tended to the perfection of certain products in separate establishments. The specialization of the present period tends toward concentration of control and the perfection of a large variety of products of the same general character. This integration of industry is a concomitant of large enterprises. It has resulted in the perfection of a multitude of articles that it would have been impossible to produce under the old form of organization. Formerly the perfection of the article depended upon the skill of the individual operator; it now depends largely upon the inventive genius who perfects the machinery for the manipulation of the raw material.

Concentration in Large Establishments.—The tendency to concentrate industry into large establishments has not been so pronounced during the year as in the past. The formation of large companies by the consolidation of independent interests was practically discontinued pending the decision of the United States Supreme Court in suits instituted against the Standard Oil, American Tobacco, United States Steel Corporation and other companies involving the anti-trust laws. Existing companies have extended their operations so as more thoroughly to cover allied industries. Many companies now not only control the production of a sufficient supply of raw material to meet their requirements, but also the facilities for its transportation, all the processes necessary to the production of the finished products, and the placing of them on the market. The United States Steel Corporation is one of the most perfectly organized of these companies. It operates iron mines, limestone quarries, lumber mills, coke and cement works, railroads and steamship lines, manufactures brick, terra cotta and fire-clay products, ore and freight cars, pig iron, steel ingots, and a multitude of finished products from iron and steel. Thus the company produces all of its raw material, and controls the railroads and vessels required for its transportation to the factories. It manufactures the material required for the construction and repair of its buildings, and is almost, if not entirely, independent of all other producers. The American Tobacco Company is organized somewhat on the same lines.

Ownership.—The corporate form of ownership has been constantly increasing and has been the principal factor in the formation of large manufacturing plants. About one-fourth of the manufacturing establishments are owned by corporations, but these are as a rule the largest and most important, as they give

employment to three-fourths of the wage earners and their products form 79 per cent. of the total value of products for all establishments in 1909.

So far as the number of establishments is concerned, the individual form of ownership is still the one of greatest importance. In 1909 there were 140,605 manufacturing establishments operated by individuals, or 52.4 per cent. of the total number reported for the United States. These establishments gave employment to 12.2 per cent. of the total number of wage earners, but reported only 9.9 per cent. of the total value of products. The percentages for 1904 were 52.7 per cent. for number of establishments, 13.8 per cent. for average number of wage earners, and 11.5 per cent. for value of product.

The following statement shows the distribution of manufacturing establishments according to the character of ownership:

There are many companies that own manufacturing plants in different sections of the country. As a rule these separate plants are counted as separate establishments, therefore the classification given in the preceding and following statements do not show the number of owners. If all plants operated by the same owner were counted as a single establishment, the magnitude of the individual operations would be much greater than is indicated.

Considering individual plants as separate establishments, it appears that there were 3,061 in 1909 for which the annual product was $1,000,000 or over. In number these establishments represented only 1.1 per cent. of the total, but they gave employment to 30.5 per cent. of the wage earners, and the value of their products formed 43.8 per cent. of the total value of products for all establishments. The figures indicate that even during the short period of five

Character of Ownership.	Number of Establishments.	Average Number of Wage Earners.	Value of Products.
All industries:			
1909	268,491	6,615,046	$20,672,052,000
1904	216,180	5,468,383	14,793,903,000
Individual:			
1909	140,605	804,883	2,042,061,000
1904	113,946	755,923	1,702,831,000
Per cent. increase	23.4	6.5	19.9
Firm:			
1909	54,265	794,835	2,184,108,000
1904	47,934	841,242	2,132,537,000
Per cent. increase	13.2	*5.5	2.4
Corporation:			
1909	69,501	5,002,394	16,341,117,000
1904	51,097	3,862,698	10,904,069,000
Per cent. increase	36.0	29.5	49.8
Other:			
1909	4,120	12,934	104,766,000
1904	3,203	8,520	54,466,000
Per cent. increase	28.6	51.8	92.4
Per cent. of total falling within each class:			
Individual:			
1909	52.4	12.2	9.9
1904	52.7	13.8	11.5
Firm:			
1909	20.2	12.0	10.6
1904	22.2	15.4	14.4
Corporation:			
1909	25.9	75.6	79.0
1904	23.6	70.6	73.7
Other:			
1909	1.5	0.2	0.5
1904	1.5	0.2	0.4

* Decrease.

years these very large establishments have increased their operations to such an extent that they now control an appreciably larger proportion of the manufactures of the country. There were 27,823 establishments in 1909 that had an annual product of $100,000 but less than $1,000,000. These establishments represent 10.4 per cent. of the total number, and they gave employment to 43.8 per cent. of the wage earners, while their products formed 38,4 per cent. of the total products for all establishments. Combining these two groups of establishments, it appears that 11.5 per cent. of the number gave employment to 74.3 per cent. of the wage earners, and their products formed 82.2 per cent. of the total value of products for all manufacturing establishments.

Establishments that have an annual product of less than $5,000 may be classed as small. These establishments still predominate in number, there being 93,349 of them in 1909; but they gave employment to only 2.2 per cent. of the total number of wage earners, while their products formed only 1.1 per cent. of the total value of products of manufacturing establishments.

From the following statement, which classifies the number of establishments according to the value of their products, it appears that only the largest establishments, those with an annual product of $1,000,000 or more, had a larger proportion of the total value of products in 1909 than in 1904, the relative proportion of every other class having decreased in the five-year interval:

VALUE OF PRODUCT

Industry and Value of Product.	Number of Establishments.	Average Number of Wage Earners.	Value of Products.
All industries:			
1909	268,491	6,615,046	$20,672,051,870
1904	216,180	5,468,383	14,793,902,563
Less than $5,000:			
1909	93,349	142,430	222,463,847
1904	71,147	106,353	176,128,212
$5,000 and less than $20,000:			
1909	86,989	470,075	904,724,296
1904	72,791	419,466	751,047,759
$20,000 and less than $100,000:			
1909	57,269	1,090,380	2,544,348,079
1904	48,096	1,027,047	2,129,257,883
$100,000 and less than $1,000,000:			
1909	27,823	2,896,475	7,946.817,284
1904	22,246	2,515,064	6,109,012,538
$1,000,000 and over:			
1909	3,061	2,015,686	9,053,698,364
1904	1,900	1,400,453	5,628,456,171
Per cent. of total falling within each class:			
Less than $5,000:			
1909	34.8	2.2	1.1
1904	32.9	1.9	1.2
$5,000 and less than $20,000:			
1909	32.4	7.1	4.4
1904	33.7	7.7	5.1
$20,000 and less than $100,000:			
1909	21.3	16.5	12.3
1904	22.2	18.8	14.4
$100,000 and less than $1,000,000:			
1909	10.4	43.8	38.4
1904	10.3	46.0	41.3
$1,000,000 and over:			
1909	1.1	30.5	43.8
1904	0.9	25.6	38.0
Average per establishment:			
1909	.....	25	$76,993
1904	.....	25	$68,433

Electrical Industries.—There has been a great increase in the manufactures that depend upon the utilization of electricity and internal-combustion engines. The annual production of electrical machinery, apparatus and supplies increased from $105,832,000 in 1899 to $243,965,000 in 1909. In 1907 there were 4,714 central electric stations, and the gross annual income from the sale of current and other activities incident to its generation amounted to $175,642,000. Electric railways have now entirely superseded the horse and cable car, and electricity is being introduced as a motive power by steam railroads, especially for terminal facilities, in large cities. It made possible the terminal station of the Pennsylvania Railway Co. in New York City that was opened during the year. Many of the large manufacturing establishments, office buildings, hotels and department stores now have their independent electric generating plants. It is estimated that there are 80,000 of these isolated electric systems in the United States. (See XXXII, *Electrical Engineering.*)

Automobiles and Motor Boats.—The internal-combustion engine finds its principal application in the automobile and the motor boat. The annual production of automobiles increased from 3,723 in 1899 to 127,289 in 1909 and the value of all products of the factories, including parts and supplies from $4,748,000 to $249,202,000. The annual production for 1911 will probably be in excess of 200,000 machines of all kinds. The industry is largely concentrated in Michigan, the products of that state forming 39 per cent. of the total for the United States. (See XXXII, *Automobiles.*)

There are about 10,000 motor boats manufactured annually and it is estimated that there are over 50,000 in use. Sail boats and row boats have been rapidly converted by the installation of the small engine, and the number of motor boats appearing annually is much larger than the number manufactured.

Electrochemical Industries.—The electrochemical industries for the manufacture of calcium carbide, carbon disulphide, electrodes, carbon black, carborundum, caustic soda, bleaching powder, alundum, sodium, and similar commercial products are largely concentrated at Niagara Falls, N. Y., Sault Ste. Marie, Mich., and other points where large water power is available. They represent a new industry that has developed almost entirely during the past decade. (See XXVIII, *Electrochemistry.*)

Moving Pictures.—During the last five years this industry has come into existence and assumed large proportions. The census of 1909 shows 16 establishments with an annual product of $4,206,448 engaged in the manufacture of the machinery, taking and developing the pictures, mounting films on reels, making lantern slides for illustrated songs, and the manufacture of miscellaneous supplies for the industry. But the industry is of much greater importance than these figures indicate, as the manufacture of the machines for taking the pictures, motors, dissolvers, etc., are a part of the machine-shop and electric-equipment industries; the taking of the pictures, staging of the plays, and development of the films are industries that can not be measured statistically.

Iron and Steel.—The increased use of iron and steel in building and structural work has greatly stimulated its production. The annual production of pig iron increased from 13,621,000 tons in 1899 to 25,795,471 in 1909, of steel from 10,685,000 to 23,523,000 tons. The production for 1910 was 27,303,567 tons of pig iron and 26,094,919 tons of steel. There is no other industry that is so indicative of the industrial progress of the country and the development of large enterprises. The number of blast furnaces now in operation varies according to the demands of the industry, but there were 388 completed furnaces with a daily capacity of 101,267 tons in 1909. In 1870 there were 574, with a daily capacity of 8,357 tons and the annual production was 1,665,000 tons. There are now single establishments capable of producing more iron than all the furnaces in the country in 1870. The

	Year.	Number or Amount.					
		Total.	Cotton Goods, including Cotton Small Wares.	Hosiery and Knit Goods.	Wool Manufactures	Silk and Silk Goods.	Cordage and Twine, Jute, and Linen Goods.
Number of establishments	1909	4,820	1,322	1,374	1,126	849	149
	1904	4,268	1,154	1,144	1,213	624	133
	1899	4,100	1,055	1,007	1,414	483	141
Salaried employees	1909	27,881	8,434	5,721	6,988	5,492	1,246
	1904	21,946	6,981	4,330	5,616	4,027	992
	1899	15,526	4,902	2,831	4,495	2,657	641
Wage earners (average number)	1909	833,740	378,818	129,287	201,751	98,769	25,115
	1904	704,051	315,874	104,092	179,976	79,601	24,508
	1899	631,979	302,861	83,691	159,108	65,416	20,903
Capital	1909	$1,709,265,000	$821,109,000	$163,641,000	$506,323,000	$144,799,000	$73,393,000
	1904	$1,254,896,000	$613,111,000	$106,944,000	$370,862,000	$109,556,000	$54,423,000
	1899	$982,560,000	$467,240,000	$82,066,000	$310,180,000	$81,082,000	$41,992,000
Salaries and wages	1909	$349,193,000	$146,256,000	$46,012,000	$100,398,000	$45,929,000	$10,598,000
	1904	$263,074,000	$106,444,000	$36,070,000	$78,975,000	$31,510,000	$10,075,000
	1899	$217,407,000	$94,040,000	$27,573,000	$64,389,000	$24,116,000	$7,289,000
Materials	1909	$947,676,000	$368,273,000	$110,049,000	$322,364,000	$107,575,000	$39,415,000
	1904	$726,357,000	$286,255,000	$76,789,000	$242,561,000	$75,861,000	$44,891,000
	1899	$503,511,000	$176,551,000	$51,196,000	$181,159,000	$62,407,000	$32,198,000
Miscellaneous	1909	$102,357,000	$34,472,000	$13,056,000	$27,562,000	$23,249,000	$4,018,000
	1904	$80,229,000	$30,487,000	$10,418,000	$21,588,000	$14,053,000	$3,683,000
	1899	$59,013,000	$22,113,000	$6,628,000	$17,330,000	$10,264,000	$2,678,000
Value of products	1909	$1,592,482,000	$629,699,000	$200,143,000	$507,219,000	$196,475,000	$58,946,000
	1904	$1,164,706,000	$450,468,000	$137,077,000	$380,934,000	$133,288,000	$62,939,000
	1899	$886,883,000	$339,200,000	$95,835,000	$296,990,000	$107,256,000	$47,602,000
Value added by manufacture (value of products less cost of materials)	1909	$644,806,000	$261,426,000	$90,094,000	$184,855,000	$88,900,000	$19,531,000
	1904	$438,349,000	$164,213,000	$60,288,000	$138,373,000	$57,427,000	$18,048,000
	1899	$383,372,000	$162,649,000	$44,639,000	$115,831,000	$44,849,000	$15,404,000

improved methods of manufacturing steel from the molten metal, the production on a large scale, and the manufacture of the finished products in the same establishments where the metal is produced has revolutionized the industry. (See XIII, *Economic Conditions and Conduct of Business;* and XXIII, *Iron and Steel.*)

Textile Manufactures.—The spinning and weaving of animal and vegetable fibers considered as a whole is one of the most important industries. The figures are summarized in the accompanying table.

There were about 137,792,000 spinning spindles at work in the cotton mills of the world during the year 1911. Great Britain leads with 54,523,000; the United States ranks second with 29,515,000; and Germany third with 10,480,000. Of the total world's production of cotton from the crop of 1910, 19,171,000 bales of 500 lb. net, Great Britain consumes about 20 per cent., the United States 25 per cent., and Germany 9 per cent. The remainder is used by other countries, of which Russia, France, India, and Japan are the principal consumers. The 4,705,000 bales consumed in the United States is about equally divided between the mills in the northern and southern states. For the year ending Aug. 31, 1911, the northern mills used 2,377,000 bales and the southern 2,328,000 bales; there were 18,438,000 spindles in the northern states and 11,085,000 in the southern states. Next to cotton, wool is the most important fiber used in the textile industry, and there were 559,810,000 pounds consumed in the United States during the year. The consumption of silk has increased rapidly. It is used not only in the silk mills but also in the cotton mills and mills using other fibers. There are about 17,729,000 lb. of raw silk consumed annually in the textile mills of the United States.

Cement.—The consumption of this material in construction work has been a feature of the building operations of recent years and the production has increased more rapidly than other industries. There were 5,652,266 bbl. of Portland cement manufactured in 1899 and 76,549,951 in 1910, an increase of 70,897,685 bbl. in the annual production within a decade.

Clothing.—The manufacture of ready-made clothing for men and women is now an important industry. It gave employment during 1909 to 394,269 wage earners and the products were valued at $953,610,000. It is essentially an urban industry and is largely localized in New York, Philadelphia, Chicago, Baltimore, Boston, St. Louis, and Cincinnati. The establishments in these cities gave employment to 270,465 wage earners, or 68.6 per cent. of the total for the United States, and their product was valued at $743,114,873, or 77.9 per cent. of the total.

Food Products.—The basic industries of this group are the flour mills; canning and preserving of fruits; vegetables, fish and oysters; butter, cheese and condensed milk; slaughtering and meat packing; rice cleaning; and the manufacture of sugar. With the exception of the slaughtering and meat packing and the refining of sugar, these are essentially rural industries. They gave employment during 1909 to 229,549 wage earners, or 4 per cent. of the total, and their products amounted to $3,035,553,000, or 15 per cent. of the total for all industries. There is a duplication in the products for the sugar industry because it includes the manufacture of the raw commodity, and also the refining of sugar. Practically all of the raw cane sugar is consumed as material in the refineries.

Industrial Centers.—Naturally, manufacturers concentrate in localities affording the best advantages for the supply of labor and material, and for the distribution of the product. As a rule, these conditions are found to the greatest extent in large cities or in the vicinity of such cities. During the early development of manufactures in the United States there was a decided tendency to concentrate in cities, but for the past 30 years there has been a marked and constant tendency toward a wider distribution, and the percentage represented by establishments located within the corporate limits

of the principal cities has been decreasing. Manufactures are being established in the smaller cities, in suburbs, and improved transportation facilities have enabled their establishment in localities which were formerly considered impracticable.

for 1909, and they gave employment to 4,316,148 wage earners, or 65.2 per cent. of the total. In 1899 the establishments in cities of this class reported 69.0 per cent. of the product and gave employment to 64.6 per cent. of the wage earners.

STATISTICS OF THE LEADING MANUFACTURING CENTERS

	Number of Establishments.		Average Number of Wage Earners.		Value of Products.	
	1909.	1899.	1909.	1899.	1909.	1899.
Total.....	74,744	60,938	2,094,402	1,586,755	$7,786,948,754	$4,706,692,667
New York, N.Y...	25,938	19,243	554,002	388,586	2,029,692,576	1,172,870,261
Chicago, Ill.....	9,656	7,668	293,977	221,191	1,281,171,181	797,879,141
Philadelphia, Pa...	8,379	7,503	251,884	214,775	746,075,659	519,981,812
St. Louis, Mo.....	2,667	2,646	87,371	64,832	328,495,313	193,732,788
Cleveland, Ohio...	2,148	1,349	84,728	52,862	271,960,833	126,156,839
Detroit, Mich.....	2,036	1,259	81,011	38,373	252,992,123	88,365,924
Pittsburg, Pa.....	1,659	1,301	67,474	71,794	243,453,693	218,198,065
Boston, Mass.....	3,155	2,878	69,637	52,853	237,457,472	162,764,523
Buffalo, N.Y.....	1,753	1,478	51,412	34,275	218,803,994	105,627,182
Milwaukee, Wis...	1,764	1,419	59,502	41,220	208,323,630	110,854,102
Newark, N.J.....	1,858	1,573	59,955	42,878	202,511,520	112,728,045
Cincinnati, Ohio..	2,184	2,454	60,192	54,942	194,515,692	141,677,997
Baltimore, Md....	2,502	2,274	71,444	66,571	186,977,710	135,107,626
Minneapolis, Minn.	1,102	789	26,962	19,620	165,404,680	94,407,774
Kansas City, Kans.	165	114	12,294	9,483	164,080,607	80,023,107
San Francisco, Cal.	1,796	1,748	28,244	32,555	133,041,069	107,023,567
Jersey City, N.J...	745	536	25,454	17,391	128,774,978	72,929,690
Indianapolis, Ind..	855	697	31,815	20,985	126,522,113	59,322,234
Providence, R.I...	1,080	929	46,381	38,368	120,240,584	78,657,103
Rochester, N.Y...	1,203	1,221	39,108	28,049	112,676,215	59,668,959
Louisville, Ky.....	903	860	27,023	23,062	101,283,955	66,110,474
So. Omaha, Neb...	71	41	6,306	6,327	92,435,712	69,508,899
Youngstown, Ohio	115	103	10,498	8,679	81,270,747	33,908,459
Lawrence, Mass...	162	167	30,542	20,899	79,992,668	41,741,980
New Orleans, La...	848	688	17,186	16,185	78,794,030	57,446,116

The 25 principal manufacturing cities of the country, measured by the value of product, contained 74,744 establishments in 1909, or 27.8 per cent. of the total for the United States; they gave employment to 2,094,402 wage earners, or 31.7 per cent.; and the value of product amounted to $7,786,948,754, or 37.7 per cent. The corresponding percentages for 1899 were 29.2, 33.7, and 41.3, respectively.

Considering all cities with a population of 10,000 or over, it appears that the value of the products of their manufactures forms 69 per cent. of the total for the United States

Imports and Exports of Manufactures.—The total imports of free and dutiable commodities during the first 11 months of the year were valued at $1,392,585,229. The partly or wholly manufactured commodities were valued at $752,599,000, or 54.0 per cent. of the total. The exports were valued at $1,835,745,135, and the partly or wholly manufactured commodities at $1,154,295,989 or 62.9 per cent. of the total. As compared with the same period for 1910 the value of the manufactured imports decreased $35,477,656, or 4.5 per cent., and the exports increased $173,076,358, or 17.6 per cent.

XXV. TRADE, TRANSPORTATION, AND COMMUNICATION

GROVER G. HUEBNER

MERCHANT SHIPPING

Tonnage Afloat.—The total documented merchant fleet afloat of the United States for the year ended June 30, 1910, comprised 25,740 vessels of 7,508,082 gross tons. This aggregate tonnage exceeds that of the preceding year by 119,327 gross tons, that of 1905 by 1,051,539, and that of 1900 by 2,343,243. The following table shows that this increase has been entirely in the domestic fleet, and that the registered marine engaged in foreign trade continues its decline. The registered fleet comprised a total of 782,517 gross tons, the smallest in amount in 20 years, except for the year 1898. The fleet of enrolled vessels, engaged in the domestic trade, on the contrary, increased to 6,593,728 tons; and the tonnage of licensed vessels of under 20 tons increased to 122,529.

YEAR ENDING JUNE 30.	REGISTERED VESSELS.		ENROLLED VESSELS.		LICENSED VESSEL UNDER 20 TONS.		TOTAL DOCUMENTED MERCHANT MARINE.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
1880.....	2,378	1,352,810	16,410	2,649,353	5,924	65,871	24,712	4,068,034
1890.....	1,527	946,695	15,153	3,201,481	6,877	85,918	23,467	4,424,497
1895.....	1,260	838,187	14,408	3,705,104	7,572	92,669	23,240	4,635,960
1900.....	1,330	826,694	13,786	4,239,569	8,217	98,576	23,333	5,164,839
1905.....	1,372	954,513	14,126	5,391,802	9,183	110,228	24,681	6,456,543
1908.....	1,591	940,068	14,115	6,307,939	9,719	117,438	25,425	7,365,445
1909.....	1,633	887,505	14,072	6,381.053	9,983	120,197	25,688	7,388,755
1910.....	1,526	791,825	14,049	6,593,728	10,165	122,529	25,740	7,508,082

Geographical Distribution. — The documented shipping of the United States during the fiscal year 1910 was distributed among geographical divisions and classes of vessels as follows:

GEOGRAPHICAL DIVISION.	SAILING VESSELS.		STEAM VESSELS.		CANAL BOATS.		BARGES.		TOTAL.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Atlantic & Gulf.	7,839	1,113,525	6,570	1,693,923	194	23,156	2,396	686,528	16,999	3,517,132
Porto Rico.....	72	3,531	13	2,010	....	.....	...	.....	85	5,541
Pacific Coast...	662	294,287	2,056	544,542	....	.....	816	79,660	3,534	918,489
Hawaii.....	11	7,466	29	10,636	....	.....	...	.....	40	18,102
Northern Lakes.	362	236,656	2,107	2,508,469	480	50,912	324	99,065	3,273	2,895,102
Western Rivers.	1	8	1,677	140,781	....	.....	131	12,927	1,809	153,716
Total.....	8,947	1,655,473	12,452	4,900,361	674	74,068	3,667	878,180	25,740	7,508,082

As during the preceding year and gradually since 1861, the tonnage of sailing vessels declined, while that of steamships increased. The more recent growth of barge tonnage continued during the year. Particularly pronounced has been this movement on the Atlantic and Gulf coasts, where in recent years the tonnage of barges has increased even

more rapidly than that of steamships. There was also a slight increase in the number and tonnage of canal boats. The aggregate tonnage distributed among the leading customs districts is as follows:

	1909.	1910.
New York	1,611,024	1,601,692
Cuyahoga, Ohio	887,777	880,614
Duluth	802,726	843,845
San Francisco	472,799	518,979
Puget Sound	301,653	266,957
Philadelphia	276,348	286,954
Boston	209,628	196,707
Baltimore	206,231	198,117
Buffalo Creek, N. Y.	251,307	268,838
Detroit	166,370	191,194
Bath, Me	102,619	100,677

Undocumented Craft.—A considerable portion of the American merchant marine consists of undocumented vessels not included in the above statistical returns. No reliable returns of these vessels has been made since 1906, at which time the United States Census Office reported a total of 19,497 vessels with a gross tonnage of 6,579,402 tons. A more detailed statement was made in the YEAR BOOK of 1910.

Relative Decline of American Deep-Sea Shipping.—For the fiscal year 1910, the proportion of the foreign trade of the United States carried in American vessels declined to 8.7 per cent., as compared with 9.5 per cent. in the preceding year, and from 66.5 per cent. to 92.5 per cent. prior to the Civil War. The decline is graphically shown in the following table:

YEAR.	TOTAL IMPORTS AND EXPORTS.				
	In Cars and Other Land Vehicles.	BY SEA.			Per cent in American Vessels.
		American Vessels.	Foreign Vessels.	Total.	
1821	.....	$113,201,462	$14,358,235	$127,559,697	88.7
1826	.....	150,331,636	12,238,163	162,569,799	92.5
1840	.....	198,424,609	40,802,856	239,227,465	82.9
1850	.....	507,247,757	255,040,793	762,288,550	66.5
1880	$20,981,393	258,346,577	1,224,265,434	1,482,612,011	17.4
1900	154,895,650	195,084,192	1,894,444,424	2,089,528,616	9.3
1905	242,265,329	290,607,946	2,103,201,462	2,393,809,408	12.1
1908	261,861,952	272,512,228	2,520,740,958	2,793,253,186	9.8
1909	253,580,297	258,657,217	2,462,693,814	2,721,351,031	9.5
1910	319,163,630	260,800,278	2,722,813,242	2,983,613,520	8.7

Total Shipping in the Foreign Trade.—The total shipping entered in the foreign trade in the fiscal year 1910 exceeded that of 1909 by 1,177,668 tons, and the total shipping cleared showed an increase of 1,509,377 tons. Its geographical distribution was as follows:

	Entered.	Cleared.
Atlantic Ports	22,188,791	21,109,082
Northern Lake Ports	9,319,012	9,195,904
Gulf Ports	4,955,270	5,536,420
Pacific Ports	3,772,733	3,864,452
Total	40,235,806	39,705,858

This was divided among the leading ports as follows:

Port.	Entered.	Cleared.
New York	13,042,818	12,541,903
Northern Lake Ports	9,319,012	9,195,904
Boston	2,714,382	1,828,887
Philadelphia	2,606,097	2,250,489
New Orleans	1,832,031	2,103,465
Puget Sound	1,806,467	2,063,152
Baltimore	1,409,917	1,189,230
Galveston	675,963	907,867
San Francisco	912,122	897,600
Mobile	670,990	692,973
Norfolk and Portsmouth	138,700	811,087
Pensacola	390,446	487,856
Key West	435,227	412,882
Savannah	289,982	385,346
Portland	349,849	320,527
Newport News	152,379	450,499
Passamaquoddy	270,925	319,062
Charleston	252,284	59,762
Brunswick	29,551	98,928
Other Ports	2,936,664	2,688,439
Total	40,235,806	39,705,858

Vessel Accidents and Tonnage Destroyed.—Each year the merchant marine suffers through an appalling number of accidents. In 1910, the American merchant fleet recorded 1,443 wrecks as compared with 1,341 in 1909. Of these, 564 occurred on the Atlantic and Gulf coasts, 415 on the Great Lakes, 198 on the inland rivers, 143 on the Pacific coast, and 123 at sea and in foreign waters. The following table shows also the number of vessels and tonnage totally lost, the tonnage damaged, the known loss to vessels and cargoes and the loss of life:

	1910.	1909.
Wrecks	1,443	1,341
Vessels totally lost	365	344
Tonnage totally lost	135,305	127,684
Tonnage damaged	2,000,997	1,584,206
Loss to vessels	$11,058,840	$9,555,825
Loss to cargoes	$2,565,580	$2,152,155
Lives lost	403	374

Tonnage Built.—During the fiscal year 1910, 1,361 documented vessels of 342,068 gross tons were constructed in American shipyards as follows:

	1908.		1909.		1910.	
	No.	Gross Tons.	No.	Gross Tons.	No.	Gross Tons.
Atlantic and Gulf Coast	655	209,778	582	108,904	601	150,828
Northern Lakes	216	341,165	174	100,402	281	168,751
Pacific Coast	359	57,050	276	22,759	279	16,870
Western Rivers	207	6,114	207	5,940	193	5,488
Porto Rico	10	109	8	85	7	131
Total Construction	1,457	614,216	1,247	238,090	1,361	342,068

Of this aggregate, which exceeds the tonnage constructed in the previous year by 103,978 gross tons, 53 vessels had a gross tonnage of 1,000 tons each, and a total of 234,706 tons or 70 per cent. of the aggregate. The steel tonnage of the year comprised 250,624, as compared with 136,923 in 1909. Of the total documented tonnage built in 1910, moreover, 257,993 tons were steam vessels, 58,997 barges, 5,720 canal boats, and 19,358 sailing vessels.

The recovery over the preceding year was even greater than was anticipated, and was on the whole more rapid than in the United Kingdom. It is now anticipated that during 1911 fully 400,000 tons will be constructed. This would still be far below the construction of the year 1908, when 614,216 tons were built and documented, but would approximate the average of the previous period from 1900 to 1907. It is expected that the construction on the Great Lakes will be but moderate because of "the large output of recent years and the higher efficiency of the carriers built in that region."*

Steamers, Size and Speed.—The two largest ocean steamers built in the United States in 1910 were the *Wilhelmina* and *Kentuckian*, with gross tonnages of 6,974 and 6,606 tons respectively. As in the preceding year, therefore, the largest American registered steam vessel is still the *Minnesota*, with a gross tonnage of 20,718. The registered merchant fleet now contains but nine vessels with a tonnage in excess of 10,000 gross tons; seven in excess of 8,000; and nineteen in excess of 5,000. The maximum size of American vessels compares unfavorably with the 32,500 gross tons of the *Mauretania* and *Lusitania* of the Cunard Steamship Company; and the 45,000 gross tons of the *Olympic* and *Titanic* (the latter now under construction) of the White Star Line.

There has been no change in the size of steamers engaged in the coastwise and Great Lakes trade, and reference is therefore made to the YEAR BOOK for 1910 (page 525). There has likewise been no material changes in the speed of American vessels.

* Annual Report of U. S. Commissioner of Navigation, 1910, p. 14.

Ship Subsidies and Mail Payments.—The total amount paid by the United States Government for the transportation of the foreign mails in the fiscal year 1910 was $3,204,129, as compared with $2,943,849 in 1909. The mail subsidies paid under the contract act of March 3, 1891, amounted to $1,114,603 in 1910, as compared with $1,189,204 in 1909. There were no changes in the rates of pay over the seven routes on which the mails are carried under contract, and the terms of the contracts will therefore not be repeated.

Several changes were made in the various additional ways in which the United States Government aids the merchant marine: (1) The tariff act of Aug. 5, 1909, reduced tonnage taxes from 3 to 2 cents per ton imposed at five entries during any one year on vessels coming from nearby foreign ports; and it repealed the reciprocal exemption law of 1884 and 1886. The act of March 8, 1910, exempts from tonnage taxes all vessels entering otherwise than by sea from foreign ports at which no tonnage or other equivalent taxes are imposed on American vessels. (2) An act of Aug. 5, 1909, changes the law permitting the free importation of shipbuilding material so that it now applies to vessels which do not enter the coastwise trade for more than six months annually. The previous act specified two months of coastwise trade.

Renewed effort was made in Congress to enact a ship subsidy law. In contrast with the far-reaching provisions of the subsidy bills which appeared in Congress but a few years ago, the recent bills have been narrowed in scope. The bill which passed the Senate in the regular session of the last Congress provided for increased mail pay to lines on routes to South America, Panama, the Philippines, Japan, China, and Australia, under the contract act of 1891. In effect, it provided that American ocean mail steamships of 16 knots or upward and of 5,000 gross tons or over, if they carry mail to these destinations, shall be paid $4.00 a mile on the outward voyage, instead of $2.00 permitted under the law as it now stands.

Even should this bill become a law, the total sum paid would be small beside the large subsidies paid by foreign countries. At present Great Britain, France, Japan, Italy, Spain, Austria-Hungary, Germany and Russia each pay more in subsidies than the United States. All foreign nations in the aggregate pay approximately $46,707,000 annually, in addition to the various other methods of aiding their shipping. Since there were no material changes in the subsidy laws of these foreign nations during the current year, the detailed summary of the sums paid will not be repeated. (See AMERICAN YEAR BOOK, 1910, pp. 525-26.)

EXTERNAL COMMERCE OF THE UNITED STATES

The total foreign trade in merchandise during the fiscal year 1911 was valued at $3,576,546,304, $2,049,320,199 of exports and $1,527,226,105 of imports. It exceeded that of 1910 by $244,614,154.

Exports to Foreign Countries.—The almost general increase in exports during 1910 continued in 1911 and became more rapid. It was distributed as follows:

EXPORTS OF MERCHANDISE BY CONTINENTS

CONTINENT.	1909.	1910.	1911.
Europe	$1,146,755,321	$1,135,914,551	$1,308,275,778
North America	309,476,694	385,520,069	457,059,179
South America	76,561,680	93,246,820	108,894,894
Asia	71,792,187	60,861,813	85,422,428
Oceania	41,389,788	50,890,087	66,067,313
Africa	17,035,434	18,551,380	23,600,607
Total	$1,663,011,104	$1,744,984,720	$2,049,320,199

The export trade of 1911 was the greatest in the history of the foreign trade, and exceeded that of the previous year by $304,336,479. This increase was very general throughout the commercial world. The only markets of considerable importance in which there were slight declines were Denmark and Portugal; in the latter the decline was due to internal political troubles, and in the former it was a continuation of the decline which was more serious in 1910. There was an increase even in China and Japan where the export trade of the United States had been lagging since 1905. The export trade with the former increased from $16,320,612 in 1910 to $19,287,836 in 1911, and that with the latter from $21,959,310 to $36,721,409. The exports to the United Kingdom, which declined during 1910, also showed a recovery of from $505,552,871 to $576,613,974.

The relative proportions to each of the continental divisions in 1911 were: Europe, 63.84 per cent.; North America, 22.30 per cent.; South America, 5.32 per cent.; Asia, 4.17 per cent.; Oceania, 3.22 per cent., and Africa, 1.15 per cent. The export trade with Europe in 1910 comprised 65.1 per cent. of the total export trade, so that in spite of the heavy increase of the European trade in 1911 the increase was relatively less rapid than in the non-European markets.

The exports to the leading individual markets are shown in the following table:

Market.	1909.	1910.	1911.
Germany	$235,324,140	$249,555,926	$287,495,814
Great Britain	514,627,365	505,552,871	576,613,974
France	108,764,262	117,627,466	135,271,648
Canada	163,448,656	215,990,021	269,806,013
Netherlands	95,012,366	84,944,878	96,103,376
Italy	58,509,595	53,467,053	60,580,766
Mexico	49,793,323	58,193,704	61,281,715
Belgium	45,093,003	41,116,585	45,016,622
Cuba	43,913,356	52,858,758	60,709,062
Argentina	33,712,505	40,694,941	43,918,511

In 1911, 45.19 per cent. of the domestic commodities exported, not including prepared foodstuffs, consisted of manufactures, as compared with 44.85 per cent. in 1910, and 40.98 per cent. in 1909. Their total value was $909,962,664. As to the remainder, 35.33 per cent. of the total consisted of crude materials for use in manufacturing; 13.97 per cent. of foodstuffs, partly or wholly manufactures; 5.13 per cent. foodstuffs in crude condition and food animals; and 0.38 per cent. miscellaneous merchandise.

The largest individual items were: cotton, $585,318,869; iron and steel, not including ore, $230,725,351; meat and dairy products, $149,389,737; breadstuffs, $124,913,537; copper, not including ore, $103,813,110; mineral oil, $98,115,516; lumber and wood manufactures, $92,255,951; leather manufactures, $53,673,057; tobacco and tobacco manufactures, $43,638,904; cotton manufactures, $40,851,918; and agricultural implements, $35,973,398. It is notable that there was a further decline in the exports of breadstuffs.

Ports of Export.—The leading individual ports of export in 1910 and 1911 were:

Ports.	1910.	1911.
New York	$651,986,356	$772,552,449
Galveston	173,178,992	220,504,917
New Orleans	140,376,560	172,835,293
Baltimore	77,381,507	85,120,843
Philadelphia	73,266,343	69,956,380
Savannah	63,428,155	72,076,045
Boston	70,516,789	71,534,082
Buffalo Creek, N. Y.	34,788,677	46,182,245
Detroit	38,368,872	46,233,833
San Francisco	31,180,760	40,624,903
Puget Sound	30,121,004	39,361,303
Mobile	27,526,245	30,154,037

In addition to the exports of merchandise, gold valued at $22,509,653, and silver valued at $64,749,958 were exported to foreign countries in 1911.

Exports to American Dependencies.—The following table shows the shipments of domestic merchandise to our non-contiguous territories:

	1910.	1911.
Alaska	$17,972,647	$15,736,510
Hawaii	20,289,017	21,677,213
Porto Rico	26,478,106	33,774,263
Philippines	16,768,909	19,677,802
Guam	59	1,057
Tutuila	90,175	82,561
Total	$81,598,913	$90,949,406

There was an increase of $9,350,493 in the shipments to our dependencies in 1911 as compared with the previous year, and the total was greater than ever before in the history of American trade. The increase was general in each of the four chief dependencies, with the exception of Alaska. The leading items were iron and steel goods, cotton goods, mineral oils, lumber, breadstuffs, meats, and rice. In addition to domestic merchandise, the shipments to these markets in 1911 included foreign merchandise valued at $1,660,190, and gold and silver valued at $1,806,665.

Imports from Foreign Countries.—In contrast with the increased export trade, imports in 1911 decreased by $29,721,325, as compared with the preceding year. With the exception of 1910, however, they were greater than in any previous year. The following table shows that the decline in imports lies in the trade with Europe, North America, South America and Oceania. The imports from Asia and Africa increased rapidly. The relative proportions imported from each continental division in 1911 were: from Europe, 50.30 per cent.; North America, 20 per cent.; South America, 11.96 per cent.; Asia, 13.98 per cent.; Oceania, 1.98 per cent., and Africa, 1.78 per cent.

IMPORTS OF MERCHANDISE BY CONTINENTS

Continent.	1909.	1910.	1911.
Europe	$654,322,918	$806,271,280	$768,167,760
North America	253,999,920	306,767,486	305,496,793
South America	163,878,724	196,104,786	182,623,750
Asia	197,548,027	193,155,344	213,449,730
Oceania	27,062,108	37,099,795	30,274,452
Africa	15,108,627	17,489,739	27,213,620
Total	$1,311,920,224	$1,558,888,430	$1,527,226,105

Imports from the leading individual countries in 1909, 1910 and 1911 were as follows:

Country.	1909.	1910.	1911.
Great Britain	$208,612,758	$271,029,772	$261,289,706
Germany	143,525,828	168,806,237	163,242,560
France	108,387,337	132,363,346	115,414,784
Brazil	98,053,229	108,154,491	100,867,184
Cuba	96,722,193	122,528,037	110,309,468
Canada	79,317,055	95,128,310	100,863,418
Japan	70,392,722	66,398,761	78,527,496
Italy	49,287,894	49,868,367	47,324,809
Mexico	47,712,214	58,795,943	57,450,111
British India	43,547,347	45,320,268	43,952,047

Of the leading countries in the import trade of the United States, there was a decline in all but Canada and Japan. Among the lesser countries in the import trade, increases were registered in China, Egypt, Asiatic Turkey, Central America, Peru, Venezuela, Colombia, Switzerland, Sweden, Spain, Portu-

gal, Norway and Holland. In all other important nations, the shipments to the United States in 1911 witnessed somewhat of a decline. 33.50 per cent. of the imports in 1911 consisted of crude materials for manufacturing purposes; 24.07 per cent. of finished manufactures; 18.60 per cent. of manufactures for further use in manufacturing; 11.29 per cent. of foodstuffs partly or wholly manufactured; 11.67 per cent. of crude foodstuffs; and the remainder of miscellaneous merchandise. All imports and groups decreased somewhat in amount except crude foodstuffs. Of the leading commodities imported, increases were registered in the case of chemicals, coffee, copper manufactures, raw cotton, fruits, vegetable oils, silk, tin, and leaf tobacco. Decreases were witnessed in cotton manufactures, diamonds, fibers and fiber manufactures, hides and skins, india rubber, iron and steel goods, silk manufactures, sugar, wood and wood manufactures, and wool.

The import trade is distributed among the leading ports as follows:

	1909.	1910.	1911.
Alaska	$13,055,355	$12,349,462	$13,813,824
Hawaii	40,395,040	46,161,288	41,180,195
Porto Rico	26,391,338	32,095,788	34,764,007
Philippines	9,433,986	17,317,897	17,400,398
Guam	.....	.....	.....
Tutuila	67,100	37,234	*
Total	$89,342,819	$107,961,669	$107,158,424

* Figures not yet available.

as compared with 60 per cent. in 1910. The other leading importing ports are Boston, $116,597,440; Philadelphia, $83,626,647; San Francisco, $53,885,021; New Orleans, $66,722,295; Puget Sound, $36,654,675, and Baltimore, $32,174,404.

In addition to the imports of merchandise, gold valued at $73,607,013, and silver at $45,937,249 was imported in the fiscal year 1911.

Imports from American Dependencies.—The receipts of merchandise from our non-contiguous possessions is shown in the following table:

In 1911, they were valued at $107,158,424, or slightly less than in 1910, but more than in any other year. In the trade with Alaska and the Philippines, the balance is in favor of the United States; while in the trade with Hawaii and Porto Rico it is in favor of the islands. The leading commodities shipped to the United States are sugar, Manila hemp, canned salmon, cigars and tobacco, coffee and fruits. In addition, during the year 1911, the non-contiguous territories and dependencies shipped to the United States foreign merchandise valued at $270,363, and gold and silver valued at $19,635,061.

IMPORTS BY GROUPS OF PORTS

	1909.	1910.	1911.
Atlantic Ports	$1,018,847,312	$1,227,154,723	$1,163,540,071
Pacific Ports	85,961,830	88,616,730	102,702,653
Northern Border and Lake Ports	112,690,231	129,123,041	137,723,850
Gulf Ports	59,565,904	68,704,561	82,147,619
Interior Ports	18,676,945	20,397,177	20,747,924
Mexican Border	16,178,002	22,911,198	20,363,988
Total	$1,311,920,224	$1,556,947,430	$1,527,226,105

The port of New York in 1911 imported articles valued at $881,592,689, or 57 per cent. of the total,

The Balance of Trade.—The general movement of the balance of trade since 1900 is shown in the following table:

	Merchandise.			Merchandise and Specie.		
Fiscal Year.	Imports.	Exports.	Excess of Exports.	Imports.	Exports.	Excess of Exports.
1900.....	$849,941,184	$1,394,483,082	$544,541,898	$929,770,670	$1,499,462,116	$569,691,446
1901.....	823,172,165	1,487,764,991	664,592,826	925,609,873	1,605,235,348	679,625,475
1905.....	1,117,513,071	1,518,561,666	401,048,595	1,198,646,897	1,660,004,502	461,357,605
1906.....	1,226,562,446	1,743,864,500	517,302,054	1,367,226,716	1,848,307,154	481,080,438
1907.....	1,434,421,425	1,880,851,078	446,429,653	1,591,878,298	1,988,989,327	397,111,029
1908.....	1,194,341,792	1,860,773,346	666,431,554	1,387,337,210	1,991,127,472	603,790,262
1909.....	1,311,920,224	1,663,011,104	351,090,880	1,399,879,023	1,810,225,714	410,346,691
1910.....	1,556,947,430	1,744,984,720	188,037,290	1,645,504,529	1,918,834,796	273,330,267
1911.....	1,527,226,105	2,049,320,199	522,094,094	1,646,770,367	2,136,579,810	489,809,443

The balance of trade turned in favor of the United States in the later seventies and gradually increased in magnitude until it reached its maximum of $679,625,475 in 1901. In normal years since then the balance declined very materially, but the last fiscal year has checked this tendency. The excess of exports over imports of merchandise in 1911 was $522,094,094, compared with $188,037,290 in the previous year; and the excess of exports of merchandise and specie combined was $489,809,443, as compared with $273,330,267.

The European, North American, Oceanic and African markets afford the greatest excess of exports, and the South American and Asiatic markets the greatest shortage. The unfavorable balance in South America is found chiefly in Brazil; while Argentina is a notable exception to the South American trade situation, the United States having a favorable balance of $14,827,779. European countries shipping to more than they purchase from the United States in 1911 are Bulgaria, Greece, Norway, Portugal, Servia, Sweden, Switzerland and Turkey. The trade balance in the Oceanic and African trade favors the United States. The leading non-European nations in which the balance of trade is unfavorable to the United States are Cuba, China, Japan, British East Indies, Asiatic Turkey, Egypt, Brazil, and all the leading South American countries except Argentina, Uruguay and Venezuela.

EXPRESS COMPANIES

In 1908, the Interstate Commerce Commission reported 85 express companies doing an interstate business; and in 1907, the United States Census Office published detailed returns from 34 companies. (See American Year Book, 1910, p. 531.) A uniform system of express-company accounts, promulgated by the Interstate Commerce Commission, became effective on July 1, 1908, and during the past year the first detailed report under this system was published. The statistical information contained in the report, however, covers only the 13 leading companies, and is as for the year ending June 30, 1909.

The total mileage covered by the operation of the 13 companies (Adams, American, Canadian, Canadian Northern, Globe, Great Northern, National, Northern, Pacific, Southern, United States, Wells, Fargo and Co., and Western Express companies) was 260,507 miles, of which 238,961 was over steam railroads, 6,414 miles electric lines, 14,138 over steamboat lines, and 994 over stage lines; 12,952 miles were located in Canada, 6,819 in Mexico,

and the remainder in American territory.

The total cost of their real property and equipment was $22,313,576 in 1909 and $20,965,767 in 1908. Their total gross receipts from operation in 1909 were $132,599,190; operating revenues, $68,567,064; operating expenses, $56,273,055; other income, $5,232,468; gross corporate income, $16,619,957; and net corporate income, $15,382,554. Of the total operating expenses $2,199,651 was for maintenance, $657,676 for traffic expenses, $49,273,031 for transportation, and $4,142,697 for general expenses.

The accompanying table shows the leading statistical items of the report distributed among the 13 separate companies.

The tonnage statistics cover but three months, April, August and December. During these months 71,013,295 pieces, weighing 2,329,342,192 pounds, were handled. During the fiscal year 1909, the 13 companies also issued 11,992,413 express money orders, valued at $124,303,150; 1,023,723 travelers' cheques, valued at $24,589,631; 4,867,353 C. O. D. checks, valued at $52,751,369; 10,191 telegraphic transfers, valued at $1,766,078; 643 letters of credit, valued at $1,685,512; and 630,762 miscellaneous financial papers, valued at $169,217,185.

Interstate express rates have since 1906 been subject to supervision by the Interstate Commerce Commission. The classification at present in force is the "Official Express Classification, No. 20," effective Oct. 1, 1910. The principal express tariffs are the "Airy Local and Joint Merchandise Express Tariffs," which have been jointly adopted for shipments between common points. Rates in individual instances have been revised by the Interstate Commerce Commission, the leading cases being Kindel *vs.* Adams Express Company, *et al.*, 13 I. C. C., Rep. 475 (1908); Ullman *vs.* Adams Express Company, 14 I. C. C., Rep. 340 (1908); Maricope County Commercial Club *vs.* Wells, Fargo & Company, 16 I. C. C., Rep., 182 (1909); and Boisé Commercial Club *vs.* Adams Express Company, *et al.*, 17 I. C. C., Rep., 115 (1909).

STATISTICS OF THE THIRTEEN LEADING EXPRESS COMPANIES

Company.	Mileage.	Cost of Real Property and Equipment.	Gross Receipts from Operation.	Express Privileges.	Operating Revenues.	Operating Expenses.	Net Corporate Income.
Adams	34,360	$6,150,899.60	$28,860,100.37	$14,938,227.51	$13,921,872.83	$12,079,187.63	$2,382,293.95
American	48,224.78	8,352,373.13	31,896,497.22	14,545,778.12	17,350,719.10	14,902,695.31	3,276,352.01
Canadian	7,794.27	211,668.13	2,179,656.14	1,058,649.40	1,121,006.74	905,490.52	197,375.59
Canadian Northern	3,129.62	29,114.24	297,365.16	113,869.25	183,495.91	119,193.94	61,845.68
Globe	1,899.85	50,000.00	548,852.97	270,216.41	278,636.56	205,995.11	297,945.49
Great Northern	7,412.16	71,288.91	2,164,433.44	911,493.22	1,252,940.22	592,361.15	629,236.38
National	1,714.25	25,971.90	1,104,025.45	422,023.63	682,001.82	575,171.64	103,313.45
Northern	6,757.75	189,408.54	3,103,462.48	1,589,149.70	1,514,312.78	850,238.53	651,404.47
Pacific	22,672.54	683,712.34	7,750,725.31	4,580,722.37	3,170,002.94	2,723,935.94	425,183.75
Southern	33,181.00	418,521.24	12,732,957.80	6,134,420.93	6,598,636.87	5,002,189.60	1,718,447.82
United States	24,206.00	2,311,207.28	16,861,625.53	7,788,729.66	9,072,895.87	8,387,995.50	883,607.72
Wells, Fargo and Co	65,698.43	3,784,084.99	24,464,650.78	11,370,662.14	13,093,988.64	9,698,689.72	4,664,379.34
Western	3,456.39	35,325.23	634,838.30	308,184.35	326,653.95	229,930.70	91,107.93
Total	260,507.04	$22,313,575.53	$132,599,190.92	$64,032,126.69	$68,567,064.23	$56,273,055.29	$15,382,553.58

THE POST OFFICE

The aggregate mail services in operation on June 30, 1910, are summarized in the following table:

Service.	Number.	Aggregate Length, Miles.	Annual Travel, Miles.	Average Rate of Expenditure.
Star routes	13,425	174,297.05	89,673,939.21	$6,823,302.025
Special office routes	938	12,219.60	2,819,105.76	25,414.17
Steamboat routes	217	27,256.40	4,826,323.93	705,326.82
Railroad routes	3,375	220,730.00	426,923,109.55	44,521,603.27
Railway postoffice cars	....	.....	.....	4,780,614.19
Railway mail service officers and clerks	16,795	.....	.....	19,420,349.44
Mail-messenger routes	7,664	5,115.81	12,176,727	1,508,342.04
Wagon routes (in cities)	297	1,131.15	5,264,141.38	1,640,967.17
Electric and cable-car routes	539	7,197.54	11,629,652.15	673,830.26
Pneumatic-tube routes	6	50.54	.....	859,173.20
Mail equipment	....	.....	.....	465,107.01
Freight on mail bags, postal cards, etc	....	.....	.....	284,828.28
Miscellaneous	....	.....	.....	575.81
Total inland service	26,461	447,998.0896	553,312,998.98	$81,709,433.685
Foreign mails, aggregate cost	....	$3,409,681.58	.....	.....
Less intermediary services to foreign countries	....	297,379.12	.....	3,112,302.46
Total	....	.....	.....	$84,821,736.145

As compared with the preceding year, the total number of routes decreased by 191; and the length of routes by 620.25 miles. The total number of miles traveled increased by 11,161,877.34, and the rate of expenditure by $950,337.31. There was a decrease in the length of the star, special office, steamboat, and mail-messenger routes; but an increase in the length of rail, wagon, electric and pneumatic-tube routes.

Cost of Postal Service.—The total amount paid to the railroads in 1910 was $49,405,311.27; to other means of transportation, $12,534,500.27; and for the transportation of the foreign mail, $3,204,129.66. In each item of transportation cost there was an increase except in that of railroad transportation, which was reduced by $464,063.25. As compared with the year 1900, however, the pay to the railroads was increased from $37,315,724.

The total revenue, expenditures and deficit of the post office since 1900 are shown in the following table:

Year.	Postal Revenues.	Postal Expenditures.	Deficit.
1900	$102,354,579	$107,740,267	$5,385,688
1905	152,826,585	167,399,169	14,572,584
1906	167,932,782	178,449,778	10,576,996
1907	183,585,006	190,238,288	6,653,282
1908	191,478,663	208,351,886	16,873,223
1909	203,562,383	221,004,103	17,441,720
1910	224,128,658	229,977,225	5,848,567

The great increase in the annual expenditures is distributed among the various services as follows:

	1900.	1905.	1909.	1910.
Service in post office	$51,214,498	$74,109,740	$102,091,071	$108,370,136
Railway mail service	8,839,767	13,289,368	18,356,800	19,389,414
Rural delivery service	420,499	20,824,269	35,586,780	37,073,733
Railway mail pay	37,315,724	45,040,564	49,869,375	49,405,311
Other means of transportation	7,794,212	11,302,795	12,156,229	12,534,501
Transportation foreign mail	2,155,567	2,832,432	2,943,849	3,204,130

Each of these items has greatly increased over the year 1900. As between the years 1910 and 1909, there was an increase in each of the great items except that of railway mail pay.

Improvements in Organization and Methods.—A striking change is the decline in the deficit from $17,441,720 in 1909 to $5,848,567 in 1910. This reduction was accomplished not by a curtailment of postal facilities, but by improvements in organization and methods. Among these improvements may be mentioned: (1) the consolidation of the divisions having charge of the rural-delivery and star-routes services; (2) the consolidation of the several groups of field agents under one inspector; (3) the abolishment of an accounting division which largely duplicated the work of the auditor; (4) the introduction of better accounting methods; (5) the requirement that "postmasters shall account for the surplus revenue derived from the sale singly and in odd lots of stamped envelopes and newspaper wrappers at prices higher than are charged the postmaster on the issue of such envelopes and wrappers in thousand lots"; (6) the investigation of "the cost of handling and transporting mail of the several classes and of conducting the money-order, registry, and special delivery services"; (7) a successful investigation into the cost of carrying mails to the railroads, and a readjustment of railway mail pay; (8) the adoption of the plan of returning undeliverable second-class matter at third-class rates; (9) the introduction of numerous changes in the registry and money-order business; (10) a reorganization of city forces; and (11) the adoption of a lighter mail pouch and of repairing western pouches at Chicago. The Postmaster-General enumerates 50 distinct changes in organization and methods tending to reduce costs or increase postal revenues.

It is again evident that second-class mail matter is chiefly responsible for the postal deficit. Approximately 873,412,077 lb. of second-class matter was handled, an increase of 12.72 per cent. over the previous year. The postage paid on this amounted to $8,177,729, or $62,438,645 less than the cost of transporting and handling the same.

The number of post offices on June 30, 1910, was 59,580, as compared with 60,144 one year previous. This decline was largely due to the extension of the rural mail-delivery service and of its consolidation with the star-route service.

Postal Savings System.—An act of June 25, 1910, authorized a newly created board of trustees to inaugurate a postal-savings system. The first deposits were received on Jan. 1, 1911, at one post office in each state and territory. Since then the system has been widely extended. Deposits are now received at the rate of a million dollars per week. (See XIV, *Banking*.)

The Parcels Post.—The international parcels post system was further extended during the past year to Hungary, Dutch Guiana and Brazil and negotiations were begun with Haiti, Santo Domingo, Argentina and the South African colonies. It now covers most of the civilized world. During the fiscal year 1910, 1,490,718 lb. of parcels-post mails were dispatched from the United

States, or 31 per cent. more than in the previous year. 1,446,357 lb. were received from foreign countries, an increase of 28 per cent.

Renewed efforts were made in Congress to introduce a domestic parcels-post system, but without final success. The Postmaster-General of the United States recommends the adoption of the parcels-post system on rural mail routes. The claim made is that delivery of parcels weighing 11 lb., the weight limit for the international parcels post, would not require an increased number of rural mail carriers or equipment, would result in increased revenues, and would ultimately result in the adoption of a general parcels-post system.

TELEGRAPHS AND TELEPHONES

Complete returns for the entire United States are not available since the Census office report for the fiscal year 1907. (See AMERICAN YEAR BOOK, 1910, p. 534.) Current returns of the leading companies, however, show the progress that has been made during the fiscal year 1910. (See XXXII, *Electrical Engineering.*)

Telegraphs: the Western Union.—The principal business operations of the Western Union Telegraph Co., which largely controls the telegraph business of the United States, are shown in the following table:

	1909.	1910.
Stock issued	$99,817,100	$99,817,100
Funded debt	38,645,000	40,572,000
Miles of wire	1,382,500	1,429,049
Offices	24,321	24,825
Messages	68,053,439	75,135,405
Gross earnings	$30,541,073	$32,754,111
Operating expenses and taxes	23,193,966	26,614,303
Net earnings	7,347,107	6,139,808
Other income	.....	1,135,092
Interest	1,732,250	1,687,830
Cash dividends	2,739,435	2,989,696
Surplus	2,875,421	2,597,384

The Postal.—Another of the large telegraphic concerns is known as the Mackay Companies, a voluntary association of many allied telegraph companies. It controls the Commercial Telegraph Cable Co., which in turn controls the aggregation of land lines known as the Postal Telegraph. In 1910, the Postal Telegraph operated 374,666 miles of wire, with 62,223 miles of pole line.

Telephones: the American Bell.—The dominant telephone concern, the American (Bell) Telephone and Telegraph Co., has acquired more of the smaller telephone concerns during the past year and has largely extended its operations. Arrangements were also made with telegraph companies for the joint use of telegraph and telephone facilities. Telegraphic messages can now be dictated by telephone for transmittal to distant telegraph offices; and such messages can likewise be received by telephone.

The increased operations of the company for the years ending Dec. 31, 1909 and 1910, are summarized in the following table:

	1909*	1910.
Capital stock	.....	$263,335,600
Funded debt	.....	116,941,000
Stations†	$5,142,692	5,882,719
Wire (miles)	10,480,026	11,642,212
Total gross receipts	32,761,341	35,358,328
Net earnings	30,190,766	31,933,214
Interest	7,095,377	5,077,321
Net income	23,095,389	26,855,893
Dividends	17,036,476	20,776,822

* Including more subsidiaries than in AMERICAN YEAR BOOK for 1910.

† Including stations of local, cooperative and rural independent lines associated with or acting as connecting lines. In 1910, such stations numbered 1,806,685.

In addition to the Bell companies, the American Telephone and Telegraph Co. controls numerous other telephone concerns. The combined operations of the entire Bell system (not including the Western Union Telegraph Co.) excluding all duplications, are shown in the following table for the years ending Dec. 31, 1909 and 1910:

	1909.	1910.
Capital stock	$352,904,100	$344,645,400
Bonded debt	187,685,300	224,791,700
Gross earnings	149,914,000	165,612,900
Operating expenses and taxes	56,708,300	62,590,500
Maintenance and depreciation	44,838,900	52,028,000
Net earnings	48,367,500	50,994,400
Interest	10,221,400	11,556,900
Net income	38,146,100	39,437,500
Dividends	23,910,100	25,160,800
Undivided profits	14,235,500	14,276,700

Independent Companies.—Most of the telephone companies not allied to the American Telephone and Telegraph Co. are members of the International Independent Telephone Association, which is particularly strong in the middle and far western states. Complete current operating statistics are not available, but the association companies number about 15,000, operate about 4,000,000 telephones, have a capital stock of about $400,000,000, about 500,000 stockholders, and have annual gross earnings of about $105,000,000.

Uniform Accounts.—Since the passage of the Mann-Elkins Act of June 18, 1910, which placed interstate telegraph and telephone companies under the jurisdiction of the Interstate Commerce Commission, steps were taken to promulgate a uniform system of accounting for them. The system went into effect on July 1, 1911, but the question as to whether it will be applied to all of the 25,000 to 30,000 telephone companies doing an interstate business will not be decided until after the Bureau of Statistics and Accounts has completed its present investigation into the location, organization, and character of the telephone business in the United States.

RAILROADS

Physical Condition and Services.—On June 30, 1910, the single track mileage of all American railroads was 242,438.84 miles, an increase of 3,604.77 miles over the mileage of the preceding year. There were 58,947 locomotives in the service of the railways, or 1,735 more than in 1909; and 2,290,331 cars, 72,051 more than in 1909; 2,135,121 of the cars were in the freight service; 47,095 in the passenger, and 108,115 in company service. The total number of employees was 1,699,420, or 196,597 more than in 1909.

During the fiscal year 1910, the railways carried 971,683,199 passengers, as compared with 891,472,425 in the previous year. The total freight carried, including freight received from connections, was 1,849,900,101 tons, as compared with 1,556,559,741 in 1909. The original tonnage of all American lines, not including freight received from connecting lines, is not as yet known for 1910; but in 1909 it amounted to 881,334,355 tons.

Operating Revenues.—The revenues received from the various services performed in the fiscal years 1909 and 1910 were as follows:

	1909.	1910.	Proportion to Total Operating Revenues, 1910.
Freight revenue	$1,677,614,678	$1,925,553,036	70.01
Passenger revenue	563,609,342	628,992,473	22.87
Mail revenue	49,380,783	48,913,888	1.74
Express revenue	59,647,022	67,190,922	2.44
Excess baggage revenue and milk revenue (on passenger trains)	13,694,171	14,733,680	.54
Parlor and chair car revenue and other passenger-train revenue	3,989,612	4,412,973	.16
Switching revenue	21,599,256	26,367,214	.97
Special service train revenue and miscellaneous transportation revenue	7,833,852	8,858,215	.32
Total revenue from operations other than transportation	19,756,577	23,778,637	.87
Unclassified			
Joint facilities revenue—*Dr.*	*500,301*	*572,875*	.0002
Joint facilities revenue—Cr.	2,052,546	2,439,272	.08
Total	$2,418,677,538	$2,750,667,435	100.00

Operating Expenses.—The operating expenses incurred in the handling of the above traffic during 1910 were:

	1909.	1910.	Proportion of Total Operating Expenses, 1910.
Maintenance of way and structures	$308,450,105	$368,507,102	20.21
Maintenance of equipment	363,912,886	413,109,929	22.67
Traffic expenses	49,287,148	55,912,620	3.06
Transportation expenses	814,088,149	916,614,826	50.30
General expenses	63,677,378	68,485,956	3.76
Unclassified	27,744	.....	
Total	$1,599,433,410	$1,822,630,433	100.00

The net operating revenue during 1910, therefore, was $928,037,002. Adding to this the revenues from "outside operations" ($61,474,140), and deducting the expenses from outside operations ($59,248,685) shows the "total net revenue" to be $930,262,457. Subtracting from this the taxes accrued ($98,034,593) shows the total "operating income" to be $832,227,864. Other income, "that is, income from investments, etc.," amounts to $252,219,946. The "gross corporate income" for the year is therefore $1,084,447,810. After making the necessary "deductions from gross corporate income" (i. e., interest, rentals, etc.), the "net corporate income" is shown to be $516,594,722. This is $128,430,607 in excess of what it was in 1909.

Capitalization.—The total capitalization of railways on June 30, 1910, (par value) was $18,417,132,238, of which $14,338,575,940 was outstanding in the hands of the public. The corresponding capitalization for the year 1909 (par value) was $17,487,868,935; and the amount outstanding in the hands of the public was $13,711,867,733. The assignment of total capitalization for 1909 and 1910 is as follows:

Classes of Securities.	1909.	1910.
Common stock	$6,218,382,485	$6,710,168,538
Preferred stock	1,467,896,060	1,403,488,842
Mortgage bonds	6,942,012,066	7,408,183,482
Collateral trust bonds	1,147,377,191	1,153,499,846
Plain bonds, debentures, and notes	803,537,301	933,966,704
Income bonds	284,497,531	290,951,276
Miscellaneous obligations	316,297,240	163,531,972
Equipment trust obligations	307,869,061	353,341,578
Total capital	$17,487,868,935	$18,417,132,238

Dividends.—The total amount paid in dividends in 1910, was $405,771,416, or 7.50 per cent. on the dividend-paying stocks; 33.29 per cent. of the outstanding stock, however, paid no dividends. In the previous year, $321,071,626 was paid in dividends, or 6.53 per cent. on the dividend-paying stock; and 35.99 per cent. paid no dividends.

Stockholders.—The number of security holders in American railroads has greatly increased during recent years. The following table shows the number of stockholders in a dozen representative railroad companies for the years 1906 and 1911:

Company.	1906.	1911.
Southern Railroad	9,119	10,485
Atchison, Topeka & Santa Fe	17,420	30,000
Southern Pacific	11,918	12,941
Union Pacific	17,791	19,862
Pennsylvania	40,153	66,520
Norfolk & Western	2,955	4,612
Delaware, Lackawanna & Western	1,500	1,709
New York Central	9,766	20,486
Chicago, Milwaukee & St. Paul	5,887	9,780
New York, New Haven & Hartford	12,627	18,652
Baltimore & Ohio	6,880	10,887
Delaware & Hudson	3,571	6,370
Twelve Companies	139,587	212,304

The federal stock and bond commission, appointed under the act of June 18, 1910, has been at work during the past year upon the investigation of the entire subject of railway capitalization and over-capitalization, but has not as yet made its report to the President.

Various additional states have during the year enacted statutes for the control of capitalization, specifying the conditions of the issue of new securities and placing their issue under the supervision of the state railroad or public utilities commissions. Such statutes were enacted in Kansas (Kan., 1911, ch. 238), Maryland (Md., 1910, ch. 180), New Hampshire (N. H., 1911, April 15), Ohio (Ohio, 1911, House Bill No. 325), and New Jersey (N. J., 1911, ch. 195).

Commercial and Physical Valuation.—There has been no federal commercial valuation of railways since the valuation of June 30, 1904, by the United States Census Bureau. (See AMERICAN YEAR BOOK, 1910, p. 537.) Various additional states, however, have authorized physical valuations during the past year. Instructions to that effect were given to the railroad commissions of California for all carriers under its jurisdiction, (Cal. 1911, ch. 20); the Public Service Commission of Oregon for public utilities, (Oregon, 1911, ch. 279); and the New Jersey State Board of Assessors for railroads and canals (N. J., 1910, ch. 307).

Railroad Consolidations.—The past year was one of many changes in the financial control of railways. The mileage of the various constituent lines has also changed, so that it becomes necessary to reconstruct the table of railway systems so as to portray present conditions. The leading systems may now be grouped as follows:

	Mileage.	
I. VANDERBILT INTERESTS:		
Boston & Albany	392	
New York Central	3,591	
Lake Shore & Michigan Southern	1,663	
Michigan Central	1,805	
N. Y., Chicago & St. Louis	561	
Lake Erie & Western	886	
Big Four	1,979	
Pittsburgh & Lake Erie	215	
Chicago, Indiana & So'thrn.	329	
Other affiliated eastern lines	1,759	
Toledo & Ohio Central	444	
Western Maryland*	575	
Chicago & Northwestern System	9,827	
		24,026
II. PENNSYLVANIA RAILROAD INTERESTS:		
Pennsylvania Lines	11,197	
Norfolk & Western	1,990	
		13,187
III. MORGAN INTERESTS:		
Erie Railroad	2,565	
Père Marquette	2,334	
Southern Railway System	8,667	
Cincinnati, New Orleans & Texas Pacific	335	
Mobile & Ohio	1,114	
Atlantic Coast Line	6,818	
Louisville & Nashville	4,590	
Chicago & Great Western	1,495	
		27,918
IV. GOULD INTERESTS:		
Wabash System	2,663	
Wheeling & Lake Erie	457	
Missouri Pacific System†	3,920	
St. Louis, Iron Mountain & Southern†	313	
St. Louis Southwestern†	1,675	
Texas & Pacific†	1,991	
International & Great Northern†	1,159	
Denver & Rio Grande†	2,778	
Western Pacific†	979	
		15,935
V. MOORE INTERESTS:		
Rock Island System	8,144	
Delaware, Lackawanna & Western‡	1,052	
Lehigh Valley§	1,431	
		10,627
VI. HARRIMAN INTERESTS:		
Oregon Short Line	1,646	
Oregon Railway & Navigation Company	1,737	
Union Pacific System (remainder)	3,791	
Southern Pacific	10,257	
Illinois Central System	6,340	
Central of Georgia	1,915	
Baltimore and Ohio	4,555	
Delaware & Hudson	875	
San Pedro, Los Angeles & Salt Lake	1,105	
Cincinnati, Hamilton & Dayton	1,015	
		33,236
VII. HILL INTERESTS:		
Great Northern	7,397	
Northern Pacific	6,281	
Chicago, Burlington & Quincy	10,443	
Colorado & Southern	1,249	
		25,370
VIII. HAWLEY INTERESTS:		
Minneapolis & St. Louis	1,027	
Iowa Central	559	
Toledo, St. Louis & Western	451	
Frisco System	7,471	
Chicago & Alton	1,025	
Chesapeake & Ohio System	2,232	
Missouri, Kansas & Texas	3,393	
Hocking Valley	350	
		16,508

	Mileage.	
IX. New Haven Interests:		
New York, New Haven & Hartford System	2,887	
Boston & Maine	3,594	
		6,481
X. Atchison, Topeka & Santa Fe		10,472
XI. Chicago, Milwaukee & St. Paul System		9,657
XII. Seaboard Air Line		3,084
XIII. Philadelphia & Reading		2,137
Grand total of above groups and systems		198,638

* Jointly with Gould interests.
† Jointly with Rockefeller, Kuhn, Loeb & Co., Vanderbilt, and other interests.
‡ Jointly with Standard Oil interests.
§ Jointly with Erie, Reading, and Vanderbilt interests.

It is seen that the total mileage of the 13 groups is 198,638 miles, as compared with 195,579 in the previous year. The leading changes in the Vanderbilt system are: (1) an increase of 2,104 miles in mileage; (2) an order of June 2, 1911, under which the Boston and Albany will be operated as a separate property, and the formation of a traffic arrangement with the New York, New Haven and Hartford; and (3) the control of the Western Maryland jointly with Gould interests. In the Morgan system it was (1) announced on Sept. 28, 1911, that a controlling interest in the Père Marquette Railroad Company was sold to J. P. Morgan and Co. by the Cincinnati, Hamilton and Dayton Railway Co.; (2) the latter line is now controlled by the Baltimore and Ohio; and (3) there is a decline of 952 miles in total mileage. Vast changes have occurred in the Gould system with the retirement of Mr. Gould from the presidency of the Missouri Pacific, and the election to the board of directors on March 14, 1911, of men representing Kuhn, Loeb and Co., the Deutsche Bank, and Blair and Co. Mr. Gould has become the chairman of the board, but the change means that the Missouri Pacific and all its allied lines, as shown in the table, are now jointly controlled by Gould, Rockefeller, Kuhn, Loeb and Co., Vanderbilt and other interests.

In the Moore system it is to be noted: (1) that the Delaware, Lackawanna and Western is jointly controlled with Standard Oil interests; and (2) that the Lehigh Valley is jointly controlled with Erie, Reading and Vanderbilt interests. In the Harriman group there was (1) an addition of the Cincinnati, Hamilton and Dayton to the Baltimore and Ohio system; (2) the formation of a new company, the Oregon-Washington Railroad and Navigation Co., to take over the Oregon Railroad and Navigation Co. and the Oregon and Washington Railroad Co.; (3) an increase of 1,721 miles in mileage.

The leading changes in the Hawley group were: (1) the acquisition of the Hocking Valley Railroad through the purchase of a majority of interest in the common stock by the Chesapeake and Ohio; and (2) an increase of 1,659 miles in mileage. Several additions were made to the Atchison, Topeka and Santa Fe and Chicago, Milwaukee and St. Paul so that their mileage was extended by 331 and 588 miles respectively.

Railway Associations.—There have been no material changes in the various railway associations of officials and employees during the current year. Their usual work as described in the previous issue of the Year Book, continued.

Car Service Bureaus.—While on Oct. 31, 1910, there were 40 car-demurrage bureaus in the United States and Canada, at the present time there are but 28. On Nov. 1, 1910, most of the bureaus in trunk line territory disbanded, and announcement was made that demurrage charges would thereafter be administered by the individual railroads. These disbanded bureaus were: Central New York Car Demurrage Bureau; New York and New Jersey Car Service Association; Northeastern Pennsylvania Car Demurrage Bureau; Philadelphia Car Demurrage Bureau; Baltimore and Washington Car Demurrage Bureau; Pittsburg Car Demurrage Bureau; Western New York Car Demurrage Association; Cleveland Car Demurrage Bureau; Columbus Car Demurrage Bureau; Nashville Demurrage and Storage Bureau; Cincinnati Car Demurrage Bureau; and the Toledo Car Demurrage Bureau. The Cana-

dian Car Service Bureaus (Eastern and Western lines) were consolidated into the Canadian Freight Association. On the contrary, the Tennessee Demurrage and Storage Bureau should be added to the completed list.

The demurrage bureaus at present in operation (Nov, 1, 1911) are the following:

(1) Virginia Demurrage Bureau.
(2) North Carolina Car Service Association.
(3) Southeastern Demurrage Bureau.
(4) Alabama Demurrage and Storage Bureau.
(5) Southern Demurrage and Storage Bureau.
(6) Memphis Demurrage and Storage Bureau.
(7) Tennessee Demurrage and Storage Bureau.
(8) East Tennessee Demurrage and Storage Bureau.
(9) Louisville Car Service and Storage Department.
(10) Michigan Car Demurrage Bureau.
(11) Chicago Demurrage Bureau.
(12) Indiana Car Demurrage Bureau.
(13) Illinois and Iowa Demurrage Bureau.
(14) Wisconsin Demurrage Bureau.
(15) Lake Superior Car Service Association.
(16) Missabe Range Car Service Association.
(17) Northern Demurrage Bureau.
(18) Central Demurrage and Storage Bureau.
(19) Missouri Valley Demurrage and Storage Bureau.
(20) Western Demurrage Bureau.
(21) Texas Car Service Association.
(22) Colorado Demurrage Bureau.
(23) Intermountain Demurrage Bureau.
(24) Montana Demurrage Bureau.
(25) Pacific Car Service Bureau.
(26) Pacific Northwest Demurrage Bureau.
(27) Canadian Car Service Bureau (British Columbia Branch).
(28) Canadian Freight Association.

Traffic Associations.—As during the previous year, there are four classes each of freight and passenger traffic associations: (1) large organizations covering wide areas; (2) smaller associations whose activities are confined to smaller districts; (3) local traffic associations; and (4) associations dealing with special forms of traffic. The legality of having carriers consult each other as to competitive rates and fares in these associations was questioned in 1910, but upon the passage of the rate act of June, 1910, giving the Interstate Commerce Commission the power to suspend proposed rate increases, the action by the Government was abandoned.

Railroad Accidents.—The total number of accidents for the year 1911, distributed by class of accident, are shown in the accompanying table. In 1911, the Interstate Commerce Commission issued its first yearly record of accidents under the law of May 6, 1910. It contains a total of 10,396 killed and 150,159 injured. The records of 1910 cover passengers and employees engaged in rail operation, and in each of these classes of accidents there was a material decrease during 1911. The current report also contains the industrial accidents of railway employees, and the accidents to outside individuals killed and injured at grade crossings, while trespassing,

RAILWAY ACCIDENTS

	1911.		1910.	
	Killed.	Injured.	Killed.	Injured.
Passengers	356	13,433	421	13,756
Employees (rail operation)	3,163	46,802	3,383	68,618
Employees (industrial accidents)	439	79,237	*	*
Other persons	6,438	10,687	*	*
Total	10,396	150,159	†	†

* Not reported in 1910.
† Not comparable with 1911.

and in yards, at stations and on tracks. The number of outside persons killed increased from 5,811 in 1909 to 6,438 in 1911, and exceeds that of any other class of fatal accidents.

Accounts and Reports.—In the previous issue it was seen how the Interstate Commerce Commission has exercised its power to fix uniform accounting systems for interstate carriers by promulgating a uniform system for the keeping of various railroad accounts. It has since been working at a uniform system for railroad-shop accounts, uniform rules for computing the average daily compensation of employees, a uniform classification of commodities carried as freight, rules for the assignment of revenues and expenses to states, and more complete statistics of transportation services at terminals and stations, but final conclusions have not as yet been reached. It was also seen that uniform systems of accounts have been enforced for express companies on July 1, 1908, and for telegraph and telephone companies on July 1, 1911.

The accounts for interstate electric lines are kept under a uniform system which became effective on Jan. 1, 1909, and it has since been voluntarily extended to many electric lines not under the jurisdiction of the Interstate Commerce Commission. On July 1, 1910, the commission enforced a uniform classification of operating revenues and expenses of sleeping-car companies. On July 1, 1911, a uniform system of operating accounts of pipe lines became effective. Under the Hepburn Act of 1906, the commission is also given jurisdiction over traffic which goes partly by rail and partly by water, and it has accordingly promulgated a uniform system of operating accounts for this class of water-line carriers, which became effective on Jan. 1, 1911. On Jan. 1, 1910, the commission enforced a uniform system of accounts for gas and electric corporations in the District of Columbia, under the appropriation bill for the fiscal year 1910.

The Division of Accounts of the Interstate Commerce Commission was very active during the fiscal year 1910. Its duties are threefold: (1) it constructs and interprets accounting systems; (2) as the board of examiners, it examines the accounts of carriers so as to insure the enforcement of the uniform systems promulgated; and (3) it conducts investigations into special features of the operation of carriers. In performing the first of these duties, the above-mentioned uniform accounting systems were worked out; in the second, it examined the accounts of 24 railroads operating a mileage of about 37,000 miles; and in the third, it made a detailed study of "industrial railroads," and upwards of 40 other investigations.

State statutes giving the state railroad or public service commissions supervision over railroad accounts were enacted during the past year in Kansas (Kan. 1911, ch. 238), Maryland (Md. 1910, ch. 180), Oregon (Ore. 1911, ch. 279), California (Cal. 1911, ch. 30 and ch. 53, constitutional amendment No. 6), New Hampshire (N. H. 1911, April 15), Ohio (Ohio 1911, House Bill No. 325), and New Jersey (N. J. 1911, ch. 195).

Recent Uniform Railway Practices.—For several years a central committee of railroads has been at work upon the formation of a uniform classification for freight traffic. While this committee has not succeeded in bringing together the several classifications on all matters, a degree of uniformity has been accomplished in various respects: (1) substantially all the rules and regulations of the separate freight classifications have been "revised and brought together in a unified form"; (2) about one-third of the articles in the present classifications have been assigned a uniform description; and (3) "uniform minimum carload weights have been prescribed for a proportionate number." Differences in traffic conditions in the various traffic districts thus far have prevented the remaining and major portion of the articles from being unified, but a sincere effort is being made by the railroads to bring about the desired uniformity.

There has been much confusion over the issue of false cotton bills

of lading in the export trade. A bill holding the carriers responsible was passed in the House of Representatives but did not become a law. A uniform plan for the control of cotton bills was then adopted. The Liverpool Cotton Merchants Committee has established a bureau in New York City to receive and record the bills of lading, copies of which the principal railways of the southern states have agreed to send. The railways have issued strict regulations to their agents in regard to the making of the bills of lading. Every bill must bear the autograph signature of the agent; all copies must be distinctly marked as "copy —not negotiable"; one copy must be sent to the steamship agent and one to the New York bureau; and the original bill of lading must be free from additions, erasures or changes, and must have pasted on it a certificate from some official of the railway, stating that the signature of the agent is genuine. These certificates or stamps may be attached only after the cotton has actually been received by the agent, and invoiced and guarded in the same way as are passenger tickets or other valuable papers. The plan may not be final, because various New York banks may ignore the bureau. (See XIII, *Economic Conditions and Conduct of Business;* and XIV, *Banking.*)

Freight Rates.—In the previous issue it was shown how in the winter of the year 1910 the railroads in many sections of the United States announced an increase in freight rates and filed revised tariffs with the Interstate Commerce Commission, and how in the rate act of June 18, 1910, the commission was then given power to suspend proposed increases subject to investigation before they become effective. After detailed hearings and investigation the commission, on Feb. 22, 1911, in two joint cases* against the Western and Trunk-Line railroads respectively, denied the requests of the carriers to increase their rates and rejected all the suspended tariffs.

The fundamental reason why the proposed increases were refused by the commission was the prosperous condition of the railroads as a whole, and the lack of necessity. The increase in gross and net earnings, net corporate income, freight tonnage, and amounts paid in dividends in 1910 over all other years in the history of railroads was chiefly responsible for the decision. Individual exceptions to the general railway situation were noted, but the commission decided that the shipping public can not be made to pay for poor financing in the form of unprofitable lease contracts or excessive bonded indebtedness.

The commission also concluded that the carriers can not reasonably expect their rates to be increased with a view to paying for the vast permanent improvements and additions to their properties out of current earnings, but that such expenditures should rather come out of new capital.

The average receipts per ton per mile for the railway system as a whole have, during recent years, advanced slightly as shown in the following table:

Year.	Receipts per Ton per Mile, Cents.	Receipts per Passenger per Mile, Cents.
1900.....	.729	2.003
1905.....	.766	1.962
1906.....	.748	2.003
1907.....	.759	2.014
1908.....	.754	1.937
1909.....	.763	1.928
1910.....	.753	1.938

Average receipts per passenger per mile have slightly declined, chiefly because of the large number of two-cent fare acts.

FEDERAL LEGISLATION

Since the passage of the Mann-Elkins Railway Act of June 18, 1910, there has been no federal legislation of importance affecting railroads.

* *In re* Investigation of Advances in Rates by Carriers in Western Trunk Line, Trans-Missouri, and Illinois Freight Committee Territories. Decision No. 3500. *In re* Investigation of Advance in Rates by Carriers in Official Classification Territory. Decision No. 3400.

The Interstate Commerce Commission, however, strengthened by this act and by the previous Hepburn Act of 1906, has been very effective during the current year. During the fiscal year 1910 it removed 817 formal cases from its docket; and 660 formal complaints were filed with, and 11 instituted by, the commission. Twenty-five proceedings, involving the suspension of tariffs, moreover, were instituted under the Mann-Elkins Act. The number of informal complaints made the subject of correspondence were 3,840 in 1910, as compared with 4,436 in 1909. During the year 1910, 737 hearings and investigations respecting alleged violations of the act have been held, during which over 65,190 pages of testimony, exclusive of exhibits, was taken.

A complete statement of the work of the commission in 1911 is not now available. The commission has, however, decided some of the leading cases in its entire history. In addition to the above mentioned rate cases, reference is made to the decisions described on a later page. Its work in developing the uniform accounting systems and enforcing them has progressed, as has also that in connection with public safety and accidents, and the promotion of uniform railroad practices.

STATE LEGISLATION

Railroad Commissions.—The following table shows the various types of state railroad commissions at present regulating the intra-state business of railways:

Advisory Powers.	Mandatory Powers Over Railroads.	Public Utilities Commissions.	Corporation Commissions.	No Commissions.
Arizona	Alabama	Georgia	North Carolina	Delaware
Pennsylvania	Arkansas	Maryland	Oklahoma	Idaho
	California	New Jersey	Virginia	New Mexico
	Colorado	New York		Utah
	Florida	Vermont		West Virginia
	Illinois	Wisconsin		Wyoming
	Indiana	Connecticut		
	Iowa	Kansas		
	Kentucky	Ohio		
	Louisiana	New Hampshire		
	Maine	Oregon		
	Massachusetts	Washington		
	Michigan			
	Minnesota			
	Mississippi			
	Missouri			
	Montana			
	Nebraska			
	Nevada			
	North Dakota			
	South Carolina			
	South Dakota			
	Tennessee			
	Texas			

Those with advisory powers may merely investigate and advise. Those with mandatory powers over railroads have the power either to prescribe individual rates or to fix a schedule of rates, and to issue mandatory orders as to matters other than rates. Public-service commissions are those with jurisdiction not only over railroads, but also over other public utilities. They exercise the power to prescribe rates. Similar to them are the corporation commissions which exercise mandatory powers over many corporations doing an intra-state business. There are at present but six states and territories without some form of railroad commission. Since the last issue, the number of "weak" commissions has been reduced from four to

two, the number of mandatory railroad commissions from 28 to 24, and the number of public service commissions has increased from six to 12. There are but three corporation commissions.

The most important current changes were the conversion of railroad commissions into public-service commissions in Connecticut (Conn. 1911, ch. 128), Kansas (Kan. 1911, ch. 238), New Hampshire (N. H. April 15, 1911), Ohio (Ohio, 1911, House Bill No. 325), Oregon (Oreg. 1911, ch. 279), and Washington (Wash. 1911, ch. 117). Connecticut previously had a railroad commission with advisory powers, and the remaining five had railroad commissions with mandatory powers. It is also of importance to note that the New Jersey Public Utilities Commission, which formerly had advisory powers, was given mandatory powers, and the act creating it was thoroughly revised (N. J. 1911, ch. 195). All the public-service commissions, therefore, at present exercise mandatory powers. (See XX, *Public Services.*)

In California (Cal. 1911, ch. 20 and ch. 386) a statute was enacted to define fully the powers and duties of the railroad commission which had been elected pursuant to the provisions of Sec. 22 of Art. XII of the state constitution. It has jurisdiction over all railroad and other transportation companies, including interurban railways, bridges, ferries, switches, spurs, tracks, terminals, yards, water craft operated in connection with railroads, private car lines, sleeping car companies, and express companies. It has mandatory powers over rates, through rates, classifications, any other charges, through routes, bills of lading, demurrage, car distribution and railway service. It also has the power to make a physical valuation of railroads and to prescribe a uniform system of accounts. A constitutional amendment has also been adopted by the voters of California providing that no rate be increased without the consent of the commission, and that there shall be no appeal from the decision of the commission to the courts except upon the question of whether it will result in confiscation of property (Cal. 1911, ch. 52). A further constitutional amendment has been adopted providing for the creation of a railroad commission of five members, appointed by the governor with consent of the senate for a term of six years (Cal. 1911, ch. 53). Still another amendment provides for the conversion of the railroad commission into a public-utilities commission (Cal. 1911, ch. 60).

The Illinois Railroad and Warehouse Commission (Ill. 1911, House Bill No. 577) was given jurisdiction over express companies, with power to fix a schedule of maximum charges, to suspend any proposed changes in express charges, regulate express company contracts and agreements, and supervise their services. The commission statute as to railroads is also thoroughly revised (Ill. 1911, House Bill No. 616), defining its jurisdiction so as to include all common carriers except teaming companies, street railroads and hack lines. Its rate-fixing powers are definitely outlined, as are also its powers over car distribution and railway service. The statute specified 35 statistical items which each carrier must each year report to the commission. The Colorado commission statute was likewise revised (Colo. 1910, ch. 5), making it an appointive commission and definitely defining its jurisdiction as covering all common carriers. The administrative powers of the Indiana commission were better defined and somewhat strengthened (Ind. 1911, ch. 225); it was given power to fix rates on its own initiative (Ind. 1911, ch. 85); to order changes in road, cars, track, stations, etc., for public protection against accidents (Ind. 1911, ch. 76); and to appoint a boiler inspector with consent of the governor (Ind. 1911, ch. 36).

In 1911 the Massachusetts Railroad Commission, one of the oldest in the United States, and always regarded as an example of a successful "weak" commission, was converted into a "strong" commission with mandatory power over railroad rates. In 1910 it was given extensive authority over the bond issues of

street railways (Mass. 1910, ch. 536). The Louisiana commission was given power to order the construction of side tracks and switches (La. 1910, p. 464). The jurisdiction of the public-service commission of the Second New York district was extended over telephone and telegraph companies (N. Y. 1910, Ch. 673). Express companies, terminals and sidetracks were placed under the jurisdiction of the Oregon commission (Oreg. 1911, Ch. 77). The Nebraska commission was instructed to provide rules for weighing freight cars (Neb. 1911, Ch. 95). The Nevada commission is by resolution requested to reduce the charges of Wells, Fargo & Co. (Nev. 1911, Senate Resolution 24). The Missouri commission is empowered to fix schedules of maximum fares (Mo. 1911, p. 162); to fix the free delivery zones of express companies (Mo. 1911, p. 146); prescribe the character of the train, baggage and express services on branch lines (Mo. 1911, p. 158); to prescribe express rates (Mo. 1911, p. 144); require sufficient passenger cars to seat all passengers (Mo. 1911, p. 156); and to require cuspidors in passenger coaches and reception rooms (Mo. 1911, p. 155). It is required by statute to fix freight rates, reconsigning, switching and other freight charges (Mo. 1911, p. 160).

The Virginia corporation commission was instructed to make rules for the testing of boilers (Va. 1910, No. 149). The Washington legislature instructed its commission to fix the grades of grain and hay, license warehouses and prescribe their rules, and see to the construction of sufficient sidetracks for the grain and hay traffic, proper scales, sufficient facilities, and police protection for grain and hay cars (Wash. 1911, Ch. 91). In Wisconsin a statute based upon the federal act of June 18, 1910, was enacted, giving to the commission the power to suspend proposed rate changes.

Freight Rate Statutes.—Distinct from the statutes affecting the powers of the state commissions over rates are those fixing rates by law. Few statutes of this kind were enacted in the past year. The Missouri freight-rate act was modified so that the commission may establish freight rates at points not above the legal maxima (Mo. 1911, p. 160). In Michigan maximum schedules of express rates were made by law (Mich. 1911, p. 205). In Oregon, the rates of Jan. 1, 1911, were established as the maximum charges for public utilities (Oregon 1911, Ch. 279).

Numerous laws directly affecting, although not fixing, freight rates, were enacted. Statutes further defining and prohibiting unfair discrimination in charges were passed in California (Cal. 1911, Ch. 20), New Hampshire (N. H. 1911, April 15, 1911), Kansas (Kan. 1911, House Bill No. 1024), New Jersey (N. J. 1911, Ch. 195), Colorado (Colo. 1910, Ch. 5), and Oregon (Oreg. 1911, Ch. 279).

In California a constitutional amendment prohibiting discriminations and providing for a long and short haul clause was adopted (Cal. 1911, Ch. 52, Constitutional Amendment, No. 50). The California legislature also enacted a provision providing for the filing of rates with the commission and their publication (Cal. 1911, Ch. 20); and the express-company statute of Illinois provides for the filing and publication of express charges (Ill. 1911, House Bill No. 577). The Indiana legislature enacted a law providing for a uniform freight classification (Ind. 1911, Ch. 225). The same statute requires the publication of rate tariffs in depots and provides that the form of the tariffs shall be as determined by the Interstate Commerce Commission. In another statute, railroad agents are required to quote freight rates upon written request by the shipper or consignee (Ind. 1911, Ch. 184).

Passenger Fare Acts.—No additional two-cent fare laws were enacted during the current year. The Missouri commission, however, was empowered to prescribe maximum fares at points not higher than now are or may in the future be fixed by law. The statute divides the railways into three classes according to earnings, and provides that the fares shall vary accordingly (Mo. 1911, p. 162).

An anti-pass law similar to the federal anti-pass act was enacted in California (Cal. 1911, Ch. 20; and Ch. 386) and a constitutional amendment prohibiting the granting of passes to specified public officials was adopted (Cal. 1911, Ch. 69, Constitutional Amendment No. 28). In Oregon the railroads were prohibited from giving passes to political committees and candidates (Oreg. 1911, Ch. 279). The above mentioned statutes prohibiting unjust discrimination in railroad charges, likewise, apply to fares as well as to freight rates.

In Kansas the anti-pass and rebating law was defined so that it does not prohibit the giving of reduced rates to the United States, the states or other political units, or to employees or their families on household goods, or the issue of mileage, commutation, party or excursion tickets, or reduced fares to ministers, county constables, college professors, school teachers, students, homeless people, attendants of livestock and railroad employees and their families (Kan. 1911, ch. 191). A similar act was enacted in Ohio (Ohio 1910, p. 322). A Vermont statute permits the exchange of mileage books for advertising at regular rates (Vermont 1910, No. 155).

Public Safety Statutes.—More railroad laws were enacted to increase the safety of the public and the carriers' employees than for any other purpose. Grade crossings were regulated in Indiana (Ind. 1911, Ch. 224 and 228), Kansas (Kan. 1911, Ch. 89 and 224), Kentucky (Ken. 1910, Ch. 52), New Jersey (N. J. 1911, Ch. 195 and 278), Vermont (Vt. 1910, No. 151), Missouri (Mo. 1911, p. 159 and p. 153), South Carolina (S. C. 1910, No. 312), and Utah (Utah 1911, Ch. 120). In Ohio the apportionment of expense in case grade crossings are abolished was fixed by law (Ohio 1910, p. 377). Severe penalties for the obstruction of tracks were fixed in Louisiana (La. 1910, p. 58), Maryland (Md. 1910, Art. 27, Ch. 503), North Carolina (N. C. 1911, Ch. 200), and Rhode Island (R. I. 1910, May 6). A similar law was passed in Missouri with regard to the interference with signals or train operation (Mo. 1911, p. 154).

Statutes limiting the maximum number of consecutive hours of labor were enacted in Oregon (Oreg. 1911, Ch. 137), Nebraska (Neb. 1911, Ch. 148), and North Carolina (N. C. 1910, Ch. 112). In Michigan the qualifications of trainmen, operators and flagmen were fixed by law (Mich. 1911, p. 322); and in Idaho the illiteracy test was applied to these employees (Idaho 1911, Ch. 135). The drinking of intoxicating liquor by these employees was prohibited in Oregon (Oreg. 1911, Ch. 135). The size of the train crews was fixed by law in Indiana (Ind. 1911, Ch. 124), Nevada (Nev. 1911, Ch. 18 and 204), and Washington (Wash. 1911, Ch. 134).

Proper locomotive headlights were required by law in Kansas (Kan. 1911, Ch. 241), and Ohio (Ohio 1910, p. 133). Switching lights and derailing devices were fixed by law in Indiana (Ind. 1911, Ch. 267). In Nebraska a law was enacted providing for the lighting of tracks in cities (Neb. 1911, Ch. 19). Power brakes were required in Ohio (Ohio 1910, p. 209) and Indiana (Ind. 1911, Ch. 169). Automatic block signals or signal systems approved by the commission will be compulsory on all lines after Jan. 1, 1912, in Indiana (Ind. 1911, Ch. 188), and in the same state it is unlawful for mixed trains to unload passengers at any but regular stations (Ind. 1911, Ch. 96). Boiler inspection is provided for by law in Indiana (Ind. 1911, Ch. 56), Ohio (Ohio 1910, p. 328) and Vermont (Vermont 1910, No. 149). The width and height of bridges were regulated in Indiana (Ind. 1911, Ch. 169) and Vermont (Vermont 1910, No. 152), and in Indiana the height of telegraph, telephone, electric, trolley and other wires over railroad tracks was fixed by statute (Ind. 1911, Ch. 202).

Public safety is further regulated by the newly created public-service commissions and by most of the above mentioned railroad commissions.

Miscellaneous Laws.—Mention was previously made of important state laws regulating accounting, consoli-

dation, physical valuation and the issue of securities. In addition, however, numerous other miscellaneous statutes were enacted during the current year.

Uniform bills of lading were established by law in Maryland (Md. 1910, Art. 14, Ch. 336), Michigan (Mich. 1911, p. 270 and 404), and Texas (Texas 1910, Ch. 9); and in Indiana (Ind. 1911, Ch. 183) and Missouri (Mo. 1911, p. 154), it was provided that the carriers' liability remains regardless of any contract that may have been made. Shippers' demurrage statutes were enacted in Vermont (Vt. 1910, No. 147), Washington (Wash. 1911, Ch. 96) and Wyoming (Wyo. 1911, Ch. 54). The free time granted to the carriers under the reciprocal demurrage law of Colorado was extended from 3 to 5 days (Colo. 1910, Ch. 5). In Kansas a commodities clause similar to that of the federal statute was enacted (Kan. 1911, Ch. 238). The number of trains stopping at county seats was regulated in Indiana (Ind. 1911, Ch. 19) and Missouri (Mo. 1911, p. 152). Interchange of traffic was made compulsory in Illinois (Ill. 1911, House Bill No. 616) and Michigan (Mich. 1911, p. 205). Baggage was defined and baggage-car equipment regulated in Michigan (Mich. 1911, p. 48). A general law requiring sufficient depot facilities was enacted in Missouri (Mo. 1911, p. 159-160); and one requiring sufficient team tracks was passed in Illinois (Ill. 1911, House Bill No. 616). A penalty was fixed in South Carolina for failure to deliver freight or give notice in case of loss or damage (S. C. 1910, No. 385). In North Carolina the railways were required to provide better facilities for the exchange of mileage (N. C. 1911, Ch. 41); in Virginia they were required to post notice of delayed trains (Va. 1910, Ch. 240); in Missouri agents were instructed to answer telephone calls (Mo. 1911, p. 155); and in South Carolina a statute was enacted providing for the settlement of freight claims on intra-state freight in 30 days, and on interstate freight in 40 days (S. C. 1910, No. 387). Nebraska carriers were instructed to provide watchmen to protect freight (Neb. 1911, Ch. 95).

The size and construction of caboose cars were fixed by law in Indiana (Ind. 1911, Ch. 60), Ohio (Ohio, 1910, p. 133), Missouri (Mo. 1911, p. 157), Nebraska (Neb. 1911, Ch. 88), and Virginia (Va. 1910, Ch. 278). Nebraska carriers were obliged to furnish proper accommodations for caretakers of live stock (Neb. 1911, Ch. 87); fences, crossings and cattle guards were made compulsory in Idaho (Idaho 1911, Ch. 223); in Kansas stock cars and yards must be cleared and disinfected (Kan. 1911, Ch. 312); and a general law regulating live-stock traffic was enacted in Oregon (Oregon 1911, Ch. 136).

RULINGS OF THE INTERSTATE COMMERCE COMMISSION

The two chief decisions of the current year have been considered in connection with freight rates, but in addition the following are of more than ordinary importance:

1. City of Spokane, *et al. v.* Northern Pacific; Commercial Club Traffic Bureau of Salt Lake City *v.* Atchison, Topeka and Santa Fe, *et al.;* Railroad Commission of Nevada *v.* Southern Pacific, *et al.;* Maricopa County Commercial Club *v.* Santa Fe, Prescott and Phoenix, *et al.;* XXI, I. C. C. Reps. 329, *et seq.* (1911).

In these, the so-called "transcontinental-rate" cases, the question of the relation of rates to Rocky Mountain points and rates to the Pacific coast points was reviewed with reference to the long and short haul clause of the Mann-Elkins act of June 18, 1910. Rates to Rocky Mountain points had been reduced by the commission in the previous year and a system of rate zones had been established. The previous decisions, however, had rested on the question of whether these rates were in themselves unreasonable; while the present decision considers the question of unjust discrimination as between these rates and those to Pacific coast points. The commission decided that the newly enacted long

and short haul clause does not confer upon the commission the arbitrary right to enforce or waive the clause in particular instances, but the power to enforce or waive it with reference to the question of unjust discriminations. The commission ruled that rates from points in Zone No. 1, such as St. Paul and Missouri River points, to intermediate points shall be no higher than to coast points; that from points in Zone No. 2, which lies 400 miles nearer the Atlantic coast, the rates to intermediate points may not exceed those to the Pacific coast by 7 per cent.; and that from points in Zones Nos. 3 and 4, which lie still nearer the Atlantic, the differences may not exceed 15 per cent. and 25 per cent. respectively. The commission concluded that water competition becomes more important as the Atlantic seaboard is approached and graded the percentages accordingly. The decision is of special importance to Spokane, Reno, Denver, and the other Rocky Mountain points which have for years complained of the present relation between intermediate and coast terminal rates; and of general interest to all in that they outline the policy of the commission with reference to the long and short haul clause. The order of the commission has been enjoined by the Commerce Court and appealed to the Supreme Court for review.

2. Railroad Commission of Texas *v.* Atchison, Topeka and Santa Fe, *et al.;* XX I. C. C. Reps. 403 (1911). In this, one of the western rate cases, the commission ruled that the advanced commodity rates of Aug., 1908, from St. Louis to Texas common-point territory, are not unreasonable. But on the contrary, it ruled that the class rates between these points are unreasonable, and fixed maximum rates which are to be substituted.

3. Meeker and Company *v.* Lehigh Valley R. R. Co.; XXI, I. C. C. Reps. 129 (1911). This decision is of importance to the coal trade in that it reduced the rates on anthracite coal from the Wyoming region to Perth Amboy, and fixed maximum rates for the future.

4. Board of Trade of Chicago *v.* Atlantic City R. R. Co. *et al.;* New York Produce Exchange *v.* New York Central *et al.;* XX I. C. C. Reps. 504 (1911). The commission in these cases dismissed the complaints against ex-lake rates, both domestic and export.

5. The Commutation Rate Case; XXI I. C. C. Reps. 428 (1911). The commission ruled that the commutation traffic stands by itself as a special and distinct kind of service for which the carrier may demand no more than a reasonable compensation. The commutation fares of the Pennsylvania Railroad around New York were declared excessive and unlawful.

6. Portland Chamber of Commerce *v.* Oregon R. R. & Navigation Co., *et al.;* XIX I. C. C. Reps. 265 (1910). Interstate class rates from Seattle, Tacoma and Portland to points in Washington, Oregon, Idaho and Montana were declared unreasonable, and a 20 per cent. reduction was ordered.

7. Corporation Commission of North Carolina *v.* Norfolk and Western Ry. Co., *et al.;* XIX I. C. C. Reps. 303 (1910). The commission decided that class rates from Roanoke, Lynchburg and Cincinnati to Winston-Salem and Durham are unjust, and fixed maximum rates for the future.

8. Arlington Heights Fruit Exchange *et al. v.* Southern Pacific *et al.;* XX I. C. C. Reps. 106 (1911). (*a*) In fixing the charge for refrigeration of citrus fruit from California to the East, nothing should be added by reason of the fact that a refrigerator car is used, nor for the service of inspection, but the expense of transporting the additional weight of ice and for repairs to ice bunkers should be considered; (*b*) the defendants' present charges for refrigeration of oranges in transit are not unreasonable; (*c*) shippers should be permitted to pre-cool their oranges; (*d*) the defendants' precooling charges are unreasonable and maximum charges are fixed for the future.

9. Board of R. R. Commissioners of Iowa *v.* Illinois Central R. R. Co. *et al.;* XX I. C. C. Reps., 181 (1911). The particular point at is-

sue was the extra charge for carrying passengers across the Dubuque bridge, but the point of general interest was the conclusion that to prove that the net earnings of a carrier are greater than those of ordinary business enterprises does not prove a rate unreasonable. Other factors must also be considered.

10. In the Matter of Restricted Rates; XX I. C. C. Reps. 426 (1911). The commission ruled that it is unlawful "to maintain tariffs applicable only upon shipments for a particular consignee, or when the commodity transported is for a particular use, or rates that are restricted to the use of certain shippers and not to all shippers alike."

11. In the Matter of the Investigation and Suspension of Advances in Rates for the Transportation of Grain, Grain Products, etc. (Investigation and Suspension Docket Nos. 6 and 22); XXI I. C. C. Reps. 22 (1911). Because rates had been reduced for competitive reasons and because of increased costs, claims for loss and damage and increased prices of the commodity transported, the commission allowed the proposed advances in rates on coarse grain and wheat to Memphis, Duluth, Milwaukee and Chicago from North and South Dakota points. It however ordered that the former relation between the rates to these points be restored; and condemned the proposed advances from southeastern South Dakota to Omaha.

12. California Commercial Association *v.* Wells, Fargo and Co.; XXI I. C. C. Reps. 300 (1911). It is unlawful for express rates to be made with the ownership of the property as a condition. Articles for various consignees may be bulked for shipment.

LEADING COURT DECISIONS

United States v. Southern Railway.—U. S. Supreme Court, Oct. 30, 1911. It was held by the U. S. Supreme Court that all equipment used on any railroad which is a highway of commerce must comply with the federal safety appliance act, even when engaged in transportation within the confines of a state. The equipment is regarded part and parcel of the road and therefore completely under the jurisdiction of the Interstate Commerce Commission. Aside from the specific question involved, the decision is important in that it strengthens the powers of the Interstate Commerce Commission, and foreshadows the further increase of federal as compared with state control over railways.

The Minnesota Rate Case.—U. S. Circuit Court, April 21, 1911. In this decision, Judge Sanborn declared unconstitutional the Minnesota state rate act on the grounds that it interfered with interstate commerce. By fixing rates and fares on intrastate traffic lower than the prevailing interstate tariffs, the carriers were practically obliged to reduce their interstate rates and fares. This the court considered a burden on interstate commerce. The congress of governors appointed a committee of protest to appear before the U. S. Supreme Court, to which the decision has been appealed, for it is regarded by them as a further increase of federal authority at the expense of state control. (See IV, *Trusts and Corporations.*)

Other Cases.—Standard Oil Co. of New Jersey *vs.* United States, 221 U. S. 1 (1911), and American Tobacco Co. *vs.* United States 221 U. S. 106 (1911).

These so-called anti-trust cases though directly involving industrial combinations are of great importance in connection with railway consolidations. The Supreme Court interpreted the Sherman law differently to these decisions than it did in the Joint Traffic Association and Trans - Missouri Freight Bureau Cases of 1897. At that time all combinations in restraint of trade were held to be illegal. As a result, the rate agreements of the railways became unlawful and their traffic associations were reorganized. In the present decisions the court decided that combinations are illegal only if they *unreasonably* restrain trade. The effect of this interpretation upon railroad consolidations and traffic associations depends upon whether or

not it is, in each particular case, shown that they unreasonably restrain trade. (See IV, *Trusts and Corporations;* and VII, *Law and Jurisprudence.*)

Union Pacific Railroad *et al. vs.* United States. U. S. Circuit Court, June 24, 1911. On Feb. 1, 1908, the government filed a suit in equity in the U. S. Circuit Court, 8th district, against the Union Pacific, Southern Pacific, etc., on the allegation that they constituted a combination in restraint of trade. On June 24, 1911, the court ruled that the Union-Southern Pacific merger is not illegal under the Sherman Act. The Standard Oil decision is cited in the majority opinion of the court.

STREET RAILWAYS

The latest complete official returns of the street railway business are those of the United States Census Office.* for the year 1907. Unofficial returns were compiled for later years in *American Street Railway Investments* and *The McGraw Electric Railway Manual.* These are not comparable with the Census returns as they do not in all cases cover the same field. They, however, show the approximate condition of the electric railway business. The leading returns are shown in the following table:

* See AMERICAN YEAR BOOK, 1910, p. 549.

UNOFFICIAL ELECTRIC RAILWAY RETURNS

	1909.	1910.
Number of companies	1,253	1,279
Miles of track	40,490	40,088
Number of cars	91,153	89,601
Capital stock outstanding	$2,427,935,397	$2,380,011,921
Funded debt outstanding	2,224,800,236	2,302,094,296
Total capitalization outstanding	4,652,735,633	4,682,106,217
Revenue—Passengers carried	7,441,114,508‡	6,046,068,372
Transfer passengers carried	1,995,658,101‡	1,285,750,576
Gross revenue	$429,744,254‡	$478,873,671†
Operating expenses	$251,309,252‡	$272,076,243†
Net revenue	$166,878,606‡	$195,234,698†

† 620 companies reporting.
‡ Year 1907 as reported by Census Office.

INLAND WATERWAYS AND COASTWISE COMMERCE

Coastwise Trade.—Complete statistics of the coastwise trade are not available because coastwise vessels are not required by law to report their cargo tonnage. The general trade conditions, however, may be summarized. The largest item of tonnage on the Atlantic coast is coal, and the United States Bureau of Statistics reports that in the calendar year 1910, 43,441,371 tons were shipped from the five leading terminals, as compared with 40,766,879 tons in the previous year. These shipments were distributed as follows:

Port.	Anthracite.	Bituminous.	Total.
New York	15,036,622	11,289,095	26,325,717
Philadelphia	1,980,830	4,720,174	6,681,004
Baltimore	272,695	3,780,120	4,052,815
Norfolk	.....	3,534,134	3,534,134
Newport News	.....	2,817,701	2,817,701
Total	17,290,147	26,121,224	43,411,371

A second item in the Atlantic and Gulf coast trade is lumber, of which growing quantities are shipped from Brunswick, Jacksonville, Savannah, Georgetown, Norfolk, Newport News, Bangor, Mobile and Charleston. The heaviest movement is from the southern ports to the large receiving ports of the north Atlantic. The Bureau of Statistics reports that in 1910, 459,534,815 ft. of southern pine were received at New York by water as compared with 486,660,000 in 1909, and 325,621,084 ft. of northern and southern lumber at Boston as compared with 307,467,509 in the previous year. The Board of Navigation Commissioners of Philadelphia reports the coastwise lumber receipts of Philadelphia at 226,717,318 ft., and the Lumbermen's Exchange of Philadelphia presents an even larger figure.

The United States Census Office reports that about 800,000 tons of cotton were, in 1910, shipped from the South to northern ports by water. In 1909, 7,754,700 bbl. of petroleum were shipped from Port Arthur and Sabine, Texas, chiefly to Marcus Hook, Pa., Gretna, La., Bayonne, N. J., Delaware River stations, Port Tampa, Fla., Philadelphia, Galveston, and Gibson Point, Pa. Other items of importance in the Atlantic and Gulf coast trade are fertilizers, phosphate rock, stone, sand, cement, brick, lime, railroad ties, poles, laths and shingles, wood and woodpulp and general merchandise, but complete current cargo statistics are not available. (See AMERICAN YEAR BOOK, 1910, p. 551, for summary of Census figures of 1906.)

The heaviest coastwise shipments of the United States are along the north Atlantic seaboard, and their magnitude and growth are approximately shown in the returns of the United States Corps of Engineers. These returns, though admittedly incomplete, show a total of receipts and shipments at the 48 leading ports from Bangor, Me., to Newbern, N. C., of 143,704,877 tons for the year 1909, as compared with 139,532,935 in 1906.

The leading items in the coastwise trade of the Pacific coast are logs and lumber, which are shipped in rafts, barges, steam schooners and steamers and sailing vessels from Puget Sound, Gray's Harbor, Portland, and upper California, chiefly to San Francisco, southern California, and Hawaii. Oil is shipped from southern California chiefly to Point Richmond, the port of Los Angeles, Portland, and Hawaii. Grain is shipped from Portland, Seattle and Tacoma to San Francisco; and a small amount of coal from Puget Sound.

The total coastwise shipments and receipts of the 8 leading Pacific ports, not including Seattle, for the year 1910 were reported by the United States Corps of Engineers as 18,900,000 tons.

Domestic Trade of the Great Lakes.—In the calendar year 1910, 86,732,316 tons of merchandise were shipped between the ports of the Great Lakes, as compared with 80,974,605 in 1909 and 60,518,024 in 1908. The following table shows the receipts and shipments of the leading classes of commodities:

GREAT LAKES (DOMESTIC TRADE)

(*Year ending December; net tons*)

	RECEIPTS.		SHIPMENTS.	
	1909.	1910.	1909.	1910.
Flour	1,237,331	1,169,111	1,248,891	1,171,327
Grain and flaxseed	3,239,334	2,782,193	3,428,175	3,030,702
Coal	17,239,112	22,576,635	19,268,356	24,680,941
Ore and minerals	47,156,675	47,947,635	47,183,650	47,963,657
Lumber	2,309,102	2,415,944	2,311,530	2,415,584
Unclassed	7,577,213	7,526,318	7,534,003	7,470,005
Total	78,752,767	84,414,636	80,974,605	86,732,316

The largest item by far is iron ore, of which 41,507,626 gross tons were shipped in 1910 from Duluth, Two Harbors, Superior, Escanaba, Ashland, and Marquette, chiefly to Ashtabula, Conneaut, Cleveland, Chicago, Buffalo, Lorain, Fairport, Erie, and Toledo. 24,680,941 net tons of coal were shipped. Hard coal moves chiefly from Buffalo, Erie, and Oswego to Superior, Milwaukee, and Chicago; while soft coal chiefly from Toledo, Ashtabula, Cleveland, Lorain, and Sandusky to Milwaukee, Superior, Duluth, Manitowoc, and Chicago; 1,207,792 thousand feet of lumber moved mainly from Duluth, Manistique, and Manistee to Chicago, North Tonawanda, and Buffalo; 36,707,315 bushels of wheat were shipped chiefly from Superior, Duluth, and Chicago to Buffalo, Chicago, Detroit, and Toledo; 39,921,929 bushels of corn chiefly from Chicago and Milwaukee to Buffalo, Ogdensburg, and Ludington; 22,659,792 bushels of oats mainly from Manitowoc, Chicago, Milwaukee, Superior, Duluth, and Gladstone to Buffalo, Ludington, and Frankfort. The Lake trade also included 13,837,837 bushels of barley, and smaller quantities of rye and flaxseed; 1,171,327 net tons of flour were shipped chiefly from Milwaukee, Chicago, and Duluth to Buffalo, Erie, and Ludington. Other leading items are pig iron, iron manufactures, salt, coffee, and package freight. All the leading items shared an increase in 1910, with the exception of wheat, barley and flour.

One index of Lake freight movements are the gateways between the lakes. In 1910 62,363,218 net tons of freight passed through the Sault Ste. Marie canals as compared with 57,895,149 in 1909, and 67,559,922 net tons passed through the Detroit River, as compared with 62,247,671 tons in the previous year.

The distribution of the total Lake trade of 1910 by lakes is shown in the following table:

Lake.	Receipts (net tons).	Shipments (net tons).
Superior	12,918,551	44,806,123
Michigan	24,517,403	13,858,637
Huron	894,702	1,405,487
Erie	45,523,565	23,864,634
Ontario	560,415	693,767
Total	84,414,636	84,628,657

Commercial Movement on Rivers and Canals.—The following table shows the total traffic passing through the state canals of New York, the Erie, Champlain, Oswego, Cayuga, and Seneca and Black River canals, as reported by the U. S. Bureau of Statistics:

NEW YORK STATE CANALS

	Tonnage on New York State Canals.					Total. Quantity.	Total Value.
	Erie.	Champlain.	Oswego.	Cayuga and Seneca.	All Others.		
1900	2,145,876	972,867	31,742	130,126	65,330	3,345,941	$84,123,772
1906	2,385,491	740,983	172,228	164,874	77,331	3,540,907	66,501,417
1907	2,415,548	678,506	143,277	112,570	58,013	3,407,914	63,903,970
1908	2,177,443	614,762	92,831	81,029	85,812	3,051,877	54,511,509
1909	2,031,307	732,125	121,717	84,957	146,430	3,116,536	59,081,572
1910	2,023,185	684,027	110,079	80,125	175,996	3,037,412	59,042,178

The east-bound traffic of the Erie Canal consists mainly of grain, lumber, salt, stone, lime, and clay; and west bound it is mostly general merchandise. North bound the Champlain Canal carries chiefly coal, stone, lime, clay, and ice; and south bound wood pulp, lumber, and iron ore. The traffic of the other New York canals consists mainly of farm

produce, lumber, coal, and general merchandise. The tonnage of the Erie Canal has declined from 6,673,370 tons in 1872 to 2,031,307 in 1910, and the total tonnage of all the New York canals at present is less than three per cent. of the tonnage moving by rail. The aggregate showed further decline in 1910 as compared with the previous year, and this decline was witnessed on each of the four chief links of the New York state system.

The tidewater coal canals, which constitute a second group, have shown no tendency in recent years to regain their former position in the coal trade. The Delaware and Raritan Canal carried 448,964 tons in 1910, as compared with 401,231 tons in 1909. About 400,000 tons, mainly of coal with certain quantities of iron and building materials, are annually shipped through the Lehigh Canal and the Delaware Division. Slightly over 50,000 tons are shipped through the Schuylkill Canal; about 88,000 through the Morris Canal, and the Delaware and Hudson has been abandoned. The traffic of all these canals has been declining within recent years. The Lehigh Canal and the Delaware Division are owned by the Lehigh Coal & Navigation Company; the Schuylkill Canal by the Philadelphia and Reading Railroad; the Morris Canal is leased perpetually to the Lehigh Valley Railroad, which has offered to present it to the state of New Jersey, and the Delware and Raritan is leased to the Pennsylvania Railroad for 999 years.

The traffic of the Chesapeake and Delaware Canal, in spite of its small depth of 10 ft. with a vessel draft of 9 ft., has in recent years increased its traffic. In 1910, its cargo tonnage aggregated 848,546 tons; in 1909, 816,037; and in 1908, 654,284 tons. In 1910, this canal moved 2,413 steamers, 1,894 barges, 701 other vessels, and 25 rafts.

There were no changes* of importance in any of the remaining state, federal and private canals of the United States during the current year. Improvements are, however, being made on the Erie Canal by the state of New York with a view of again making it a highway of importance. The agitation for construction of an inland route along the Atlantic coast so as to provide a sheltered waterway for the coastwise fleet—particularly barges—has again arisen. The United States Engineer Corps have surveyed routes for the chief links in the proposed system, and during the past year a committee of the Atlantic Deepwaterways Association submitted to the United States War Department a detailed traffic report in the interests of an improved barge canal from Philadelphia to New York. A ship canal across Cape Cod is at present being constructed by the Cape Cod Canal Company.

River Traffic.—On a number of American rivers considerable quantities of freight are annually carried by barges, steamers, rafts and gasoline boats. The United States Bureau of Statistics reports that in 1910 Lock No. 3 of the Monongahela River passed a downstream traffic of 9,138,196 tons, and Lock No. 1 an upstream traffic of 1,329,919 tons. The United States Engineer Corps reported a total of 11,486,278 tons for the year 1909, consisting chiefly of coal, sand, and gravel, iron and steel goods. The Allegheny River annually carries considerable quantities of coal, gravel, sand, lumber, timber and stone. The United States Bureau of Corporations reports that annually about 20,000,000 tons are moved on the Ohio River and its tributaries, and 11,500,000 tons on the Ohio River proper. On the upper Ohio the traffic consists mainly of coal, logs, sand, gravel, and package freight; on the middle Ohio, coal, lumber and timber, grain, tobacco, and other farm products; and on the lower Ohio, coal, corn, wheat, groceries, livestock, flour and tobacco.

The United States Engineer Corps reports annual cargo tonnage of over four million tons on the Willamette and lower Columbia rivers, consisting chiefly of grain, flour, lumber, farm products, logs, machinery

* For length, depth and termini of leading state, federal and private canals see AMERICAN YEAR BOOK, 1910, p. 553.

and general merchandise. It likewise reports 773,945 tons on the San Joaquin River for the year 1909; and 382,710 tons for the Sacramento River. The Hudson annually moves about 8,600,000 tons, chiefly of building materials, coal, wood, grain, lumber, ice, farm produce, manufactured products and general merchandise. The tonnage of the Delaware is in the nature of coastwise and foreign rather than river traffic, as it is the outlet for a large ocean port. In 1906, the United States Census Office reported an aggregate of 20,577,000 tons; and since then the traffic has fully recovered from the depression of 1907 and 1908. The leading shipments are coal, sand, petroleum, stone, oysters and fish, fertilizers, chemicals and iron products; the leading receipts are sand, coal, lumber, wood pulp, ties, mine props, oil, produce and fruit, chemicals, sugar, grain, and fertilizers. In addition, the Bureau of Navigation Commissioners in 1910 estimated receipts and shipments of general merchandise in regular line steamers to and from coastwise points and within the Delaware capes at 2,675,600 tons.

The best known of all American streams, the Mississippi River, has but a light and declining tonnage. The largest item is the coal coming from the Ohio River; other articles carried include stone, gravel, sand, oil, provisions and groceries; grain and its products, cotton, cotton-seed oil and its products, iron and steel, lumber and live stock. The total shipments between St. Louis and Cairo in 1909 are stated at 318,554 tons; between Cairo and Memphis, 1,232,093; between Memphis and Vicksburg, 1,071,037; and between Vicksburg and New Orleans, 2,104,720, a total of 4,726,434 tons. The total, however, contains many duplications. It is reported that in 1906 the commerce of the entire Mississippi River system, including all tributaries except the Ohio River system, did not exceed 4,304,278 tons, and that since then this traffic has, on the whole, slightly decreased.

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XXVI. MATHEMATICS AND ASTRONOMY

MATHEMATICS

E. B. Wilson

In a subject so entirely intellectual as pure mathematics, so largely dependent for any estimate of true values upon the developments and eliminations which time alone can accomplish, it is probably the normal condition that the reviewer, whether by his own reading or by inquiry among colleagues, should fail to elicit any items of extraordinary progress during a year past. This does not mean that the usual numerous minor technical advances have not been in evidence too frequently for individual mention; and it does not mean that the future may not mark 1911 as the birth year of some great new theory by no means conspicuous in its swaddling clothes.

Instructive Essays.—Illustrative of these remarks and highly valuable in itself is the address "The Published and Unpublished Work of Charles Sturm on Algebraic and Differential Equations" (*Bull. Amer. Math. Soc.*, vol. xviii, p. 1), by Prof. M. Bocher (Harvard), retiring president of the American Mathematical Society. He shows that the birth of Sturm's greatest work must be dated 1829, and is represented merely by some half-dozen titles and short notes; the great memoirs did not appear till 1835-6; and it is likely that the value of Sturm's work was not so clear in the early '30's, or the late '30's, as it was fifty years later or as it is to-day. On March 22, before the Société Math. de France, the philosopher-mathematician B. Russell (Cambridge, Eng.) made an address "On the Axioms of the Infinite and the Transfinite." This essay, though somewhat technical, is perhaps the least technical, clearest, and most up-to-date presentation of our knowledge and our doubts as to the infinite and transfinite in mathematics. It should be remarked that in mathematics the infinite and transfinite cannot be mere words and hazy ideas, as is often the case in theology and philosophy, but must have at least sufficient definiteness to be capable of logical analysis free from self-contradiction; the difficulties of the subject are best appreciated by those most familiar with it. For those who are interested, as every school teacher of elementary mathematics should be, and as many educated persons must be, in a semi-popular survey of intermediate mathematics from an elementary viewpoint and of elementary mathematics from a higher perspective, the appearance of a series of *Monographs on Mathematics* (Longmans, Green & Co.), written by especially qualified professors in various institutions and edited by J. W. A. Young (Chicago), is one of the most important events of the year.

Mathematical Prizes.—A number of the learned societies or academies have foundations for mathematical prizes of no mean distinction and monetary value. One of the most distinguished is the Bolyai Prize (established in honor of Bolyai, one of the first investigators in non-Euclidean geometry) of a medal and 10,000 crowns, awarded quinquennially by the Hungarian Academy to the mathematician whose total work during the preceding five years seems most valuable. The award in 1905-6 went to H. Poincaré (Paris), widely regarded as the greatest living mathematician, and recently elected mem-

ber of the Académie Française; the award in 1910-1 very appropriately was to the eminent D. Hilbert (Göttingen). A prize which attracts greater popular attention is the Wolfskehl Foundation, of 100,000 marks, held by the Göttingen Academy and established a few years ago as a prize for the proof or disproof of Fermat's Last Theorem—that "if n is an integer greater than 2, no integers x, y, z can be found to satisfy the equation $x^n + y^n = z^n$." The Göttingen Academy, which will consider only printed, not manuscript, articles, has been deluged with contributions from people of almost every status, except that of competent and professional mathematicians. An exposé of the fallacies of some of the proofs submitted has been running in the *Archiv für Mathematik*. The Paris Academy (of Sciences) has a considerable number of prizes and a fair amount of money to dispense annually. Last year the *grand prix* was not awarded, but the academy awarded 10,000 francs to the estate of J. Tannery, deceased Nov. 11, 1910, well known for his work on function theory, but especially loved as underdirector (for sciences) of the Ecole Normale Supérieure at Paris, through which most of the French university professors have passed.

Physics and Astronomy.—The two subjects in mathematical physics which are apparently attracting greatest attention are the principle of relativity founded by Lorentz, Einstein, and Minkowski (see pp. 556 and 601 of the 1910 YEAR BOOK), and the theory of the statistics of radiant energy founded by M. Planck (Berlin). (See XXVIII, *Physics*.) A valuable contribution to these topics was made by Lorentz (Leiden) in lectures on "Old and New Questions in Physics," published in the *Physikalische Zeitschrift* at the very close of 1910 (the lectures were delivered previously at Göttingen at the invitation of the Academy, which devoted to them some of the accruing interest on the Wolfskehl Foundation). Planck's theory seems to imply that energy is transmuted in definite finite elements, not by infinitesimal amounts. This view has not met with complete favor, though the results of the theory are satisfactory, and must still remain under discussion. The Adams Prize of the University of Cambridge, awarded in mathematical physics, went this year to Prof. A. E. H. Love (Oxford) for his work, *Some Problems of Geodynamics* (Cambridge University Press, 1911). Whether geodynamics is physics or astronomy might be difficult to say. For work on the theory of comets and the completion of the lunar tables, L. Schulof was awarded the Pontécoulant Prize by the Paris Academy.

General Activities.—*The Annals of Mathematics*, a journal devoted to the publication of didactic and original articles in higher mathematics, originally founded by Prof. O. Stone (Virginia) and published for the last twelve years by Harvard, moves to Princeton. Prof. H. B. Fine (Princeton) was elected president of the Amer. Math. Soc.; Profs. Bliss (Chicago) and Story (Clark), vice-presidents. Prof. W. S. Eichelberger becomes director of the U. S. Nautical Almanac. Profs. A. W. Phillips (Yale) and T. W. D. Worthen (Dartmouth) have retired. We are fortunate in having in this country this year Prof. J. Hadamard (Paris) at Columbia. It is interesting to note the numbers of doctors of philosophy in mathematics which the universities of this country are turning out. Up to 1910, the record year was 1905 with 21; in 1910 there were 23, of whom three were women; in 1911 there are 26, of whom five are women —and two-fifths of the whole number came from two universities, namely, six from Chicago and five from Yale.

BIBLIOGRAPHY

Some noteworthy books appearing late in 1910 or in 1911 are:

CHRISTOFFEL.—*Gesammelte Abhandlungen.* (Teubner, 1910.)

DARBOUX.—*Systèmes Orthogonaux.* (Paris, Gauthier-Villars, 1910.)

KLEIN.—*Elementarmathematik vom höheren Standpunkt aus.* (Teubner, 1911.)

KNESER, A.—*Integralgleichungen.* (Vieweg, 1911.)

MINKOWSKI.—*Gesammelte Abhandlungen.* (Teubner, 1911.) A collection of mathematical papers.

POINCARÉ.—*Théorie des Marées.* (Paris, Gauthier-Villars, 1910.)—The third volume of his lectures on celestial mechanics.

REID.—*Elements of the Theory of Algebraic Numbers.* (Macmillan, 1910.)

VEBLEN and YOUNG.—*Projective Geometry,* Vol. I. (Ginn, 1910.)

VOIGT.—*Kristalphysik.* (Teubner, 1910.)

WHITEHEAD and RUSSELL. — *Principia Mathematica,* Vol. I. (Cambridge University Press.)

YOUNG, J. W.—*Fundamental Concepts of Algebra and Geometry.* (Macmillan, 1911.)

ASTRONOMY

DAVID TODD

Research.—Mascart in his *Progress and Evolution of Astronomy* has made keen criticisms, especially concerning coördination in observational work, that ought to be helpful in the further development of the science; Sir David Gill, addressing the Royal Astronomical Society, has given his opinion on some of the present needs of astronomy. The year's research has proceeded along recognized and conservative lines of active inquiry. The first volume of Euler's works is published by the Swiss Academy of Natural Sciences, and the fourth volume of Sir George Darwin's *Scientific Papers,* dealing with periodic orbits and other questions, has issued from the Cambridge University Press. Brush's kinetic theory of gravitation has provoked discussion, the existence of a luminiferous ether has been questioned, and the bearing of the principle of relativity in gravitational astronomy has been considered by Whittaker and Plummer, de Sitter, Eddington and Curtis with all the unwelcome innovations its acceptance would introduce. (See XXVI, *Mathematics;* and XXVIII, *Physics.*)

Necrology.—The deaths of the year include Johnstone Stoney, who was fortunate in having Sir Robert Ball as his biographer; Meyer, of the Urania Gesellschaft at Berlin; Leveau of the Paris Observatory, who had served under six directors—from Le Verrier to Baillaud; Peter at Leipzig; Terby of Louvain, keen observer of planetary surfaces; Mills, patron of the Lick Observatory from its inception; Hooker, a generous benefactor, who has provided for the construction by Ritchey of a 100-in. mirror for the Mt. Wilson Observatory; and Mrs. Fleming, an honorary member of the Royal Astronomical Society, curator of astronomical photographs at Harvard, and discoverer of many new stars and variables.

Prizes, Honors and Appointments.—Boss was elected a member of the St. Petersburg Academy, Hale received the Cambridge degree of Doctor of Science, Dyson the Edinburgh Doctor of Laws, Frost the Dartmouth doctorate in sciences, Pickering received the German order *Pour le mérite,* and Turner was appointed Halley lecturer at Oxford. Sir David Gill was elected a foreign member of the Royal Academy of Sciences at Stockholm, and the gold medal of the Royal Astronomical Society was given to Cowell for his contributions to gravitational astronomy. The Lalande prize of the French Academy was awarded to Cowell and Crommelin for their researches on the orbit of Halley's Comet, the Valz prize to Javelle (nebulae and periodic comets), and the Janssen medal to Campbell (stellar spectroscopy). Fayet goes to Nice, Baker succeeds Seares as director of the Laws Observatory, and Claxton follows Doberck at Hong Kong. Sir William Christie retires as Astronomer Royal, having held that office since 1881; Carnera goes to Genoa, and Sampson to Edinburgh as Astronomer Royal for Scotland. The Cresson medal of the Franklin Institute was bestowed upon Brashear, and Kimura received the medal of the Imperial Academy of Japan, on the Emperor's foundation, for his discovery of the independent annual term in the latitude variation. Evershed assumes the directorship of Kodaikanal, in place of Michie Smith, retired, and Hartmann

goes from Göttingen to be director at the Argentine Observatory of La Plata. Donohoe comet medals of the Astronomical Society of the Pacific have been awarded to Kiess and Brooks, the Henry Draper gold medal of the National Academy to Abbot, and the Royal Society's Copley medal to Sir George Darwin for his researches in the domain of astronomical evolution. Flammarion has been signally honored in France, and an influential committee has been formed to raise an enduring monument to the memory of Janssen. Mitchell and Baker have been elected honorary members of the Astronomical Society of Mexico, and Brown an honorary fellow of Christ College, Cambridge.

Societies and Exhibitions.—The Astronomical Society of the Pacific, which suffered severe loss in the San Francisco earthquake of 1906, is again restored to usefulness, and is issuing its publications as formerly. The Martin Kellogg Fellowships of the value of $1,200 annually are established by this Society. The Royal Astronomical Society of Canada has recently issued a volume of investigations. The Astronomical Society of India has been established, with headquarters at Calcutta. The Astronomical Society of Barcelona, of which Professor Eduardo Fontseré is president, has a membership of 230, publishes a monthly bulletin, and has the building of an observatory in prospect. The Leeds (England) Astronomical Society issues a journal and transactions. The Nantucket Maria Mitchell Association offers an annual astronomical fellowship of $1,000 to women from June 15, 1912. The Astronomical and Astrophysical Society of America has issued the first volume of its publications. The Society met this year at Ottawa. Pickering was reëlected president, and Hussey secretary. Both the attendance and the number of papers were smaller than usual, the latter relating chiefly to photographic and spectroscopic research. The Society meets in August, 1912, at Allegheny. The Photographic Astrometry Committee of this organization, being strongly of the opinion that photographic methods can be successfully applied to absolute as well as differential determination of star positions, recommend that the north and south polar points be ascertained by means of trails with a fixed telescope, as originally proposed by Pickering and developed by Jacoby; and that other polar points be interconnected with stellar regions on the equator. It is hoped that fundamental data can thus be ascertained with high accuracy. At the Coronation Exhibition, London, the section devoted to astronomy consisted of a unique collection of ancient instruments—astrolobes, quadrants, dials and nocturnals, models of the path of Jupiter's eighth satellite and of the moving star-cluster in Taurus; also an ample collection of photographs and transparencies illustrating many phases of recent astronomical progress. An international conference in Paris dealt with the preparation of the government ephemerides.

Lectures and Addresses.—Dyson delivered three lectures at the Royal Institution on the "Progress of Astronomy," and Saunder gave the Gresham Lectures on the history of telescopes. Turner delivered a masterly address on the "Characteristics of the Observational Sciences," much of which relates to the quality and conduct of the astronomer's work today. Arrhenius delivered a course of Lowell lectures, in which he dealt with comets and the aurora, explained the canals of Mars as natural in origin, and farther elaborated his idea of the "fate of the planets." There were addresses by both Brown and Frost, the former on the relations between Jupiter and the asteroids, the latter on the contribution of astronomy to general culture. Schuster delivered a course on solar and terrestrial physics at the Johns Hopkins University, and Woodward an address on geodynamics, or the mechanics of the formation of worlds.

Observatories.—Dyson makes his first report as Astronomer Royal, exhibiting the conduct of the Greenwich Observatory with all that thoroughgoing administration which has come down from Bradley's day to Airy. Photographic magnitudes and determination of stellar parallaxes are now added to the work of the

Observatory, as a result of natural expansion of its activity. Hough, as H. M. Astronomer at Cape Town, reports the photographic and fundamental work progressing on the lines laid down by Sir David Gill. Daily photographs of the sun are now taken to supplement the Greenwich series. Turner and his corps at Oxford have published an important series of papers relating to solar eclipse work, the measurement of star photographs, mathematical astronomy and discussion of variable stars. Volume VII of the Oxford *Astrographic Catalogue* gives measures of 76,000 star images, declination N. 25°. Baillaud, director at Paris, reports more than the usual amount of meridian work, including lists of stars from Backlund and Boss for the new fundamental catalogue. Careful preparations are making for longitude determinations, utilizing wireless signals from the Eiffel Tower. Three volumes of *Annales* have been issued, and the centenary of the birth of Le Verrier (March 11), discoverer of Neptune, was duly celebrated. Edinburgh reports on the year's work as executed under Dyson, while Astronomer Royal for Scotland, including double-star measures, sun's rotation, and seismography. The Dominion Government of Ottawa presents the report of an effective astronomical organization. Perrine reports progress in the Gesellschaft programme at Cordova. Nearly a thousand plates were taken with the astrographic telescope, a new 5-in. Repsold circle is installed and working finely, and the printing of the revised Gesellschaft zones is already begun. The Harvard Observatory continues its abounding publication activities, among the works issued being two volumes of meridian observations by Searle. The observatories at Brussels, Meudon, Potsdam. Pulkowa and Gröningen have each issued a volume of observations. The U. S. Naval Observatory, in Vol. VI of its publications, gives the results of all observations with both the 12-in. and 26-in. telescopes, from 1893 to 1907, chiefly upon the outer planets and their satellites, and including also comets, double stars, and two transits of Mercury; also a new value of the solar parallax, the mass of Titan, and many orbits of satellites, comets and small planets, together with a catalogue of 23,500 southern stars, compiled by Eichelberger and Littell. The Italian observatories are described in *Rivista di Astronomia* (Turin), and the plates of the *Astrographic Catalogue* assigned to the Vatican Observatory are now in process of measurement by the "ladies of a religious order who are doing it excellently." Ducret describes the observatories of ancient India. The Geographical Society of France has founded a new observatory at Sétif, in northern Africa, at 3,600 ft. elevation. There is a project on foot for removal of the Solar Physics Observatory from South Kensington to a more favorable site. A new solar observatory is to be established in Australia, and a branch of the Smithsonian Astro-physical Observatory is recommended for Mexico. The Sproul Observatory of Swarthmore College has been dedicated; also a new observatory will soon be begun at Wesleyan University. The New South Wales government has provided for a state astronomer and a new observatory.

Instruments.—Metcalf's 16-in. photographic lens, ground and figured by himself, is now finished and mounted at the Harvard Observatory. Its field of perfect definition is much increased by the use of plates suitably curved by pneumatic pressure, as suggested by Pickering. Schorr has reorganized the Hamburg Observatory with a refractor of like dimensions, also a 40-in. reflector; and the 30-in. Brashear refractor at Allegheny is now complete except the objective. Warner and Swasey have remounted the famous 18½-in. Clark glass which discovered the companion of Sirius. Turner directs attention to a novel method employing photographic telescopes in fundamental and other work, to replace the meridian circle. By applying the principles of ball bearings and steel-bridge construction, Todd has designed an open-air telescope with altazimuth mounting, suitable for telescopes of great focal length, which would be particularly effective for star-parallax work. Ambronn is perfecting a method of pho-

tographic registry of transit observations. Reimer offers an 80 cm. celestial globe, long a desideratum. Noteworthy improvements in the French manufacture of invar for geodetic uses are reported, and Riefler has effected important modifications of time-service systems. Hartness has erected a novel turret coudé refractor, and the University of Michigan a 38 in. reflector.

The Moon.—This year marking the 300th anniversary of the birth of Hevelius of Danzig (1611-1687), the founder of selenography, his native town duly celebrated the event. Brown reports progress on the new Yale tables of the moon's motion. Radau regards the solar perturbations of Dulaunay's lunar theory, with Andoyer's corrections, as sufficiently exact for practical astronomy, though not in full accord with Hansen. Crommelin has revised Hansen's lunar parallax from Greenwich and Cape Town observations of the lunar crater Mösting A, the corrected distance of the moon being 238,820 miles. E. King has photographed many lunar occultations at Harvard. The different qualities of the light reflected from various parts of the lunar surface, first investigated by Wood, has brought out many interesting conclusions, particularly as to the amount of ultra-violet light reflected. The 12th and concluding part of Loewy and Puiseux's *Photographic Atlas of the Moon* has been issued, and Günther discusses every variety of lunar formation. Saunder continues his excellent series of selenographic positions from negatives by Ritchey with the 40-in. Yerkes refractor. Goodacre has finished a new map of the moon, 60-in. diameter, based on some 1,400 points measured by Saunder, and Howard has attempted lunar positions photographically, discussed by Russell.

The Sun.—Hinks, from observation of Eros, deduces a solar parallax of 8.8065″. Abbot and Fowle have ascertained the mean value of the solar constant of radiation as 1.922 cal. per sq. cm. per minute, for the earth at its mean distance from the sun, and they conclude that the sun may be a variable star with slight fluctuations of three-hundredths of a stellar magnitude. Maunder at Greenwich has kept monthly tab on the principal sun spots and spot groups, now passing their minimum; Schuster investigates the influence of planets in the formation of sun spots, dealing with the correlation between the position of spots at their first appearance and the heliocentric longitude of the planets, especially Jupiter, Venus and Mercury. With reference to spot periodicity, he suggests a possible connection between the 33-year period and the Leonid meteors. The sun's rotation has been reinvestigated spectroscopically by Adams, Lasby and Plaskett, and Chevalier has ascertained anew the rotation from the faculae. Ricco and Newbegin continue the record of solar prominences with graphic diagrams, and Slocum finds indication of horizontal currents in the sun's atmosphere, poleward in middle latitudes and oppositely in high latitudes, but at the equator practically neutral. Evershed found the angular speed of rotation of a solar prominence equal to that of the hydrogen of the chromosphere, and he continues the spectroheliograms at Kodaikanal by a 7-in. Michelson grating, with clear signs of vorticular motion round sun spots. Cotton studies radial velocities on the sun, especially displacements of certain lines near spots and prominences.

St. John has investigated the motion and condition of calcium vapor over the umbrae and penumbrae of sun spots, and over the accompanying flocculi and circumflocular regions, as well as other localities where calcium vapor exhibited exceptional phenomena. In the umbrae of most spots, the vapor is descending with an average velocity of about a mile per second, while over the umbrae it has very little vertical motion. Bosler in *Les Théories Modernes du Soleil* gives an elementary exposition of these theories with comments, and Pringsheim, in his *Physik der Sonne*, deals with both the technical and popular sides of solar research. Deslandres lectured at the Royal Institution on the progressive disclosure of the entire atmosphere of the sun, from revelations by the spectroheliograph of his own and Hale's de-

vising. He puts forward the theory that the upper layer of the solar atmosphere is ionized and under the action of a magnetic field originating movements in the solar ions, particularly those rising and falling. Chevalier has the sun's figure under investigation, and Birkeland develops the electric constitution of the sun, regarding the photosphere as a sea of electric arcs, and further applying the idea broadly to general cosmogony. Brester seeks to explain solar phenomena by the emission of β and γ rays from the sun, due to the presence of helium in that body. Puiseux has discussed broadly the place of the sun among the stars, Shuman has invented a solar motor practicable for arid regions within the tropics, and Moreaux at least has not given up hope of establishing connection between solar phenomena and terrestrial meteorology. Abbot finds the sun's temperature equal to that of a "black body" at 6000° absolute Centigrade, and he is conducting an expedition to Algeria for further research on the solar constant.

Eclipses.—From plates of the 1910 Tasmania eclipse, Wesley makes the coronal extensions very small, nowhere reaching beyond a quarter of the sun's diameter from the limb. Cortie, chief of the English expedition, observed the total solar eclipse of April 28, 1911, at Vavau in the Tonga Islands of the Pacific. Also H. M. S. *Encounter* carried a second Government expedition in charge of W. Lockyer, accompanied by McClean, with an excellent equipment of spectroscopes, only partially successful. Stefanik, the French observer, had better fortune; but the best weather was experienced by Worthington, an English observer, and the Australian Government expedition under Baracchi, which got a fine series of coronal negatives. Lockyer describes the corona as distinctly of the sun-spot minimum type. Wragge, from an island in the Tongan group, got a cloudless view of a two-minute totality with successful photographs. Bauer made magnetic observations at Tau..

Störmer has investigated mathematically the structure of the solar corona; and Miller, from an investigation of Lick photographs, advances a modified mechanical theory of the corona, certain streamers being a resultant of ejection, solar rotation, the sun's attraction, and the radiant pressure of the sun. Terao and Hirayama publish their report of the India eclipse (1898), with excellent photographs of the corona. Monck calls attention to new eclipse cycles, and Todd investigates the paths of total eclipses of the sun in Mexico, 1850-2150. Anticipating the eclipse (total annular) of the sun, visible in Portugal, Spain and France on April 17, 1912, Bigourdan gives full data. Another solar eclipse will be total in Brazil, Oct. 10, 1912.

The Planets.—Brown discusses planetary librations; and Belopolsky, testing the accuracy of his rotation of Venus by that of Mars already known, finds the value 1.44 days for Venus, in confirmation of his researches of 1903 and 1908, and negativing the slow rotation period assigned by other observers. Joly reviews the methods of estimating the age of the earth (*a*) by the age of the ocean derived from solvent denudation (100 million years); (*b*) from the sedimentary column (125 million years); (*c*) by radioactivity (8 million to 1,600 million years). The possibility of reconciling all the different estimates is attended with great difficulty. Humphreys discusses the earth's radiation zones and the distribution of water vapor on clear days. Albrecht's continued research on the variation of latitude from observations at the six international stations shows that the earth's pole in 1910 traveled in a circular course outside its path for the year previous, and in June, 1910, was about 37″ (nearly 40 feet) from its mean position, the greatest displacement yet recorded. A fine series for variation of latitude has been completed by Gratschew from ten years' observations at Kasau. Effective Jan. 1, 1912, Portugal and the territories of that nation, including Macao, St. Thomé, Madeira and the Azores, have adopted standard time on the nearest integral hour from the meridian of Greenwich. British Guiana also has accepted a similar stan-

dard, and Western European time is now used throughout France. Hagen at the Vatican Observatory has devised a new experimental proof of the earth's rotation. Both the zodiacal light and the *gegenschein* were especially brilliant within the past year. Many observers, among them Abbot from the summit of Mt. Whitney, have attempted evaluations of the brightness of the night-time sky, and he finds that one square degree of the polar sky gives as much light as one-fourteenth of a first-magnitude star. Barnard directs attention to an obscure phenomenon of the sky which he calls self-luminous night haze, not connected with the aurora. Birkeland and Störmer have photographed the aurora borealis and put forth the theory that this manifestation of luminescence in the upper air is due to solar cathode rays which on their way through interplanetary space converge toward the earth's magnetic poles, and thus produce bright fluorescence. Vegard makes the aurora due to X-rays. Birkeland's magnetic observations have been continued in the depth of an ancient Egyptian tomb at Aswan. Sir Norman Lockyer, continuing his notes on observations of sun and stars in some British stone circles, concludes from an investigation of the cluster of circles at Botallak, St. Just, Cornwall, that they were erected for astronomical observations, there being two distinct groups of alignments, one associated with the May-year worship, the other with the later solstitial-year ritual; the date of the former being about 1700 B. C., and the latter 1400 B. C.

Mars.—Lowell finds the diameter of Phobos nearly two and a half times that of Deimos. Antoniadi, director of the Mars Section of the British Astronomical Association, has issued reports of the detailed observations of the 1905 and 1907 apparitions, with numerous sketches of the planet. Jonckheere made systematic observations of the Martian surface; and Worthington, observing at Flagstaff, confirmed the "startlingly artificial and geometrical appearance of the Martian markings," though not committing himself to any deductions therefrom. Barnard and Hale have published their Martian photographs of 1909, the finest ever taken, in which neither they nor Antoniadi find any trace of straight canals. Jarry Desloges has issued a neat volume of observations and sketches of planetary surfaces, in especial that of Mars. Innes also has contributed sketches of Mars. Observing this planet at the present apparition (1911), he makes out many bright spots; but the southern polar cap is small and seen with difficulty, while the "canals" appear as broad bands with indefinite edges. Although the appearance and disappearance of the white polar caps correspond to fixed Martian dates, there is no regularity as to changes in the dark spots which, especially in the equatorial regions, do not appear related to the seasons. Nor does he find any evidence of the existence of a liquid state consequent upon the vanishing of the white polar substance. Antoniadi contests the reality of the dark band seen round the polar cap of Mars by the Flagstaff observers. Chapeau and Danjon are prosecuting a series of laboratory experiments to elucidate if possible the question of reality of the Martian canals. Valuable observations were begun at Juvisy in April, seven months before the 1911 opposition (November 24). Lowell announced the Martian "canals first photographed" August 30. Numerous changes seem to have taken place since 1909, especially in Libya. Tikhoff concludes that the polar cap is ice, not snow.

Asteroids.—Leuschner has prepared tables of 12 of the asteroids originally discovered by Watson. The discovery of asteroids has continued, chiefly by Wolf, Metcalf, and Cerulli. According to Charlier, the number of small planets, although now 720, is insufficient for a summary review. Samter has discussed the general perturbations of Eros (433), an ephemeris for the unfavorable southern opposition of which next year has been prepared by Seagrave.

Jupiter.—Lohse contributes an important memoir on all the surface features of Jupiter. These also were followed by Lane through the last op-

position. Jupiter's great red spot, discovered by C. W. Pritchett in 1878, and in recent years quite invisible, has become more than usually distinct, showing a pronounced acceleration in its motion. There is slight evidence that it may represent a region of the solid planet in process of formation, as in ten months it changed its Jovian longitude no less than 30°. Jupiter's eighth satellite photographed at Helwan shows a slight increase in period over 739 days. Ultimately a very accurate mass of the planet will be derivable from the motion of this satellite.

Saturn.—Maggini recorded a brilliant projection on the ball of Saturn, and Phillips made fine drawings of the planet. Wilde from his investigation of the periodic times of Saturn's rings concludes that they are ejectamenta from the interior of Saturn; and he thinks the satellites of Mars had a similar origin. Todd announces the optical resolution of the ring, and Birkeland proposes an electric radiation theory of the rings.

Comets.—Borrelly presents full statistics of all comets since the beginning of the 16th century. From a critical examination of the Chinese work of Man Tua Lin, Hirayama concludes that Halley's comet passed perihelion in Feb. A. D., 374. Fayet investigates the orbits of comets of short period, applying the criterion of Tisserand. Lindemann makes some quantitative applications of radiation pressure to cosmic problems, in particular Halley's comet, which was followed visually by Barnard, and photographically by Curtis, nearly to the end of May, making its period of visibility one and three-quarter years. Nordmann found the light of the nucleus of Halley's comet almost entirely solar in origin. Backlund continues his significant researches on Encke's comet, the most interesting feature of which is the acceleration of its mean motion. This suddenly changed its amount in 1858, 1868, 1895 and 1904, dates near sunspot maxima. At its last previous return in 1908, it was exceedingly faint, and caught by photography only at the Cape Observatory. Bosler makes its brightness vary with the eleven-year period of sun-spot activity. Gonnessiat of Algiers rediscovered it July 31. Comet 1905 II (Borrelly) was found at Helwan, Egypt, by Knox Shaw, Sept. 19. Faye's comet, rediscovered by Cerulli at Teramo Nov. 8, 1910, was followed by Gonnessiat till March 25. D'Arrest's comet was seen as late as Jan. 22 by Gonnessiat, and Metcalf's comet (1910 *b*) until April 18 by Schiller. Wolf's comet, very faint, was refound by its original discoverer on June 19. A new comet (1911 *b*), discovered July 6 by Kiess, was about 19 million miles distant from the earth in mid-August. It developed a tail one and a half degrees long, and its spectrum showed the typical bands of carbon and cyanogen, its continuous spectrum being very faint. Brooks's comet (1911 *c*) discovered at Geneva (N. Y.) July 20, approached within 50 million miles, developed a faint tail about 30° long; Barnard found its head a half million miles in diameter, and in October it was equal to a second magnitude star. Quénisset's comet (1911 *f*) became a faint object in Corona Borealis. Beljawsky discovered a new comet (1911 *g*) Sept. 28, which developed finely a month later, with a tail 15° in length. Bohlin reproduces a fine photograph of comet 1910 *a* taken at Stockholm, showing the principal tail of 18° and slightly curved, also a secondary tail of 2°. Pokrowski, on investigating the repulsive force which drove the particles of the tail of this comet away from the nucleus, finds the chief tail conforming to Bredichin's Type II, and the smaller tail to Type III. Konkoly found the red end of the spectrum much brighter than the violet in the comets 1908 III. Halley, and 1910 *a*; also extensive measures of the bands were made visually. De la Baume-Pluvinel's spectroscopic examination of comet Morehouse shows that cyanogen and carbon were present only in the head; while carbon monoxide and nitrogen constituted the whole comet, with no variation in the comet's spectrum. The year 1911 was unusual for the number of comets, no less than ten telescopic ones being visible in July, and Leuschner's abbreviated method

of calculating their orbits has proved a material advance. The physical condition of comets was discussed by Eginitis and many others.

Meteors.—*The Observatory* prints a very helpful letter on the observation of meteors, written 35 years ago to Denning by A. S. Herschel. Denning utilized the brilliantly fine summer to make an exceptional series of meteor observations. The Perseids were not unusually abundant, but there were active showers of Capricornids, Lacertids and Sagittids. The Aquarids were but meagrely represented. From 45 years' observations at Bristol, England, he derives the hourly number of meteors visible as follows: six per hour during the first six months; with an increase in July, culminating in 69 per hour on August 10.

Denning has calculated the brilliant Leonid fire ball of Nov. 16, 1910, and finds its height from 45 to 91 miles, its radiant in the sickle of Leo, and the length of its flight 165 miles, with a velocity of 30 miles per sec., passing over Scotland and the north coast of Ireland. Remarking the high importance of meteors in the cosmogony, the far-reaching relations of these objects, their vast numbers and their cometary associations, Denning further notes the failure of photography to record their flight, and indicates the desirability of more data relative to the long duration of showers, and their stationary or shifting radiants. Trowbridge suggests that the origin of luminous and persistent meteor trains may be due to phosphorescence of gases produced by ionization at altitudes of 50 to 60 miles. Keyes, notwithstanding the great number of meteors found in the Painted Desert, Arizona, asserts that Coon Butte was not due to abnormal meteoric fall, but is probably of volcanic origin. Barringer and Davison, however, conclude that the crater was made, not by a single great meteorite, but by a compact cluster or swarm of many such iron or other meteorites, traveling together as the head or part of the head of a small comet. Farrington reports recent meteoric finds at Leighton, Alabama, and Quinn Canyon, Nevada, with a list of recorded falls since 1800, of which more than 300 are authentic. Olivier adduces proof that the η Aquarids are intimately connected with Halley's comet.

The Stars.—Turner from a series of measures of the plates known as the "Harvard Sky" shows the accuracy of star positions derivable therefrom. Ristenpart announces the publication of the Santiago atlas of the southern heavens in 50 charts, two series of which are already issued. Boss, under whose direction a Carnegie Institution Observatory was established in Argentina, reports the completion of 87,000 observations on 15,000 stars, and the return of the observers to the Dudley Observatory, Albany, where the work of reduction will be carried on. The observing program was completed inside of the expected time, owing to the great prevalence of clear nights, nearly 300 yearly. Comstock discusses problems of stellar motion; Eddington theorizes on stellar distribution; Halm has adduced new evidence as to the existence of star streams, and Oppenheim treats stellar proper motions by harmonic analysis, leaving open the question of an ideal central body. Wilkens, from a study of 620 stars with large proper motions, derives a new position of the solar apex in good agreement with other modern estimations. By combining proper motions with radial velocities, Campbell finds the average distance of 180 stars of the solar type equal to 90 light-years; and Lau finds the mean parallax of stars of the tenth magnitude to be between two and three thousandths of a second of arc, or many hundred light-years. Schlesinger continues his photographic determinations of stellar parallaxes, adding greatly to the accuracy of this critical work, especially for the brighter stars, by means of a rotating disk employed to reduce the brightness of the parallax star. He finds the great focal length of the 40-in. Yerkes refractor very favorable for this research. Aitken, Doberck, Burnham, Espin and Olivier continue the publication of their observation of visual doubles. Letters to Knott from that keen observer of double stars, the "eagle-eyed" Dawes,

are published in *The Observatory*. Jonckheere, at his new Observatoire d'Hem, has made a specialty of observing doubles. Moulton and Russell discuss visual binary systems, and Aitken, whose discoveries of new double stars now aggregate 2,400, presents a definite scheme for use of the term "double" involving the magnitude of the two components and their distance apart, of which Lewis does not wholly approve. Pickering, revising the methods of ascertaining stellar magnitudes and the difficulties inherent therein, determines the photographic magnitudes of stars from the visual or photometric estimates, by adding a constant depending upon the class of the star's spectrum. The Potsdam and Oxford uranometries are thus compared, with very small residuals. E. King, by measuring the photographic magnitude of 153 stars at different foci, devises an absolute and independent system, and concludes from the increased redness of the more distant stars that there is a slight absorption of starlight in space. Stebbins, with the delicate selenium photometer, has derived stellar magnitudes more accurate than by photographic or visual methods. Nordmann continues his researches on the diameters of stars, by ascertaining the effective temperature from photometric observations, and finding Sirius, Procyon, Vega, α Cygni and Algol not far from equal to that of the sun, but Alpha Persei and Polaris nearly double, Capella about eight times, and Aldebaran and β Andromedae thirteen times the sun's diameter. Sir Norman Lockyer pursues further the sequence of chemical forms and stellar spectra, and Adams investigates the physical condition of Sirius, Procyon and Arcturus by means of very bright spectra obtained with the 60-in. reflector at Mt. Wilson. Since the 1910 meeting of the International Solar Union, extensive discussion of the question of classifying stellar spectra has led to the general expression of expert opinion favorable to the Draper classification as developed by the Harvard observers in their systematic surveys of the heavens, in preference to the systems originated by Secchi, Vogel and Lockyer. Cannon has classified 1,688 southern stars by their spectra, and examined many hundred doubles also. Baxandall's research on the chemical origin of various lines in solar and stellar spectra compares the Mt. Wilson results with those at South Kensington. Capella and Arcturus are compared with the sun, the former resembling the general solar spectrum, while the latter is very similar to sun-spot spectra. Titanium and vanadium appear to have a large share in producing the distinctive spectrum. Sun spots and Arcturus would seem to have a temperature lower than that of Capella and the sun's general photosphere. Hagen discusses various scales for stellar color-estimates.

Variable Stars.—The unique library of photographic plates at Harvard continues to give unsurpassed facilities for verifying stellar discoveries, as the recent number of new stars, especially in Sagittarius, attests. Cannon has prepared a useful volume of data relating to the elements and observations of variables. The Astronomische Gesellschaft Committee on Variables consists of Dunér of Upsala, Hartwig of Bamberg, and Müller of Potsdam. Krentz, Editor of *Astronomische Nachrichten*, publishes the announcements of all new variables, and devotes much space to these bodies. The Committee's comprehensive catalogue of variables is divided into (*a*) variable stars; (*b*) suspected variables; (*c*) variables in clusters; (*d*) new or temporary stars, now about 1,000 in number. Hertzsprung makes Polaris a photographic variable of the δ Cephei type, the amplitude of its fluctuation being 0.171 magnitude and its period 3.97 days; confirmed by King. Whittaker has applied Schuster's periodogram method to SS Cygni, deriving a formula from the British Association measures which seems to represent them with approach to accuracy. Brook plots the light curve from an extended series of estimates, and this star with about 50 others is included in the routine at Amherst and other observatories which report regularly to Harvard. Observations of Mira (o Ceti) at Catania and

Utrecht fix the last maximum at July 20-21, 1910, magnitude 3.2, mean period about 318 days, and range of seven magnitudes. Concerning RT Persei, as investigated with the Princeton telescope, Dugan concludes that the two stars of this Algol system are practically equal in size, and that there is no doubt of the occurrence of a secondary eclipse, with a light variation during the intervals between eclipses. Roberts investigates the variation of the southern star S Arae, and Curtiss studies the photographic spectrum of β Lyrae, suggesting two hypothetical binary systems, each of which is consistent with the observed variation of the star's light. Stebbins, by applying the selenium photometer to Algol has discovered that its companion, far from being dark, emits more light than the sun; and Ichinohe catalogues and discusses about 100 Algol variables. Zinner studies the general distribution of variables.

Nova Lacertae.—Nova Lacertae was discovered by Espin, Dec. 30, 1910. Its visible existence prior to the recent outburst has been established by Barnard, who finds the object as a 14th magnitude star on his plates of 1893, 1907 and 1909. This *nova* has steadily declined ever since its outburst. Nova Lacertae was abundantly observed, especially by Frost, Barnard, Slocum and Parkhurst, at the Yerkes Observatory, both optically and photographically. All the hydrogen lines in its spectrum were complex in character, recalling Nova Aurigae in 1892. Its light, although decidedly red, was nevertheless strongly actinic. Nova Lacertae turns out to be a pronounced temporary star and not a variable. It changed in color from red to bluish white, the change being very rapid during January. Its spectrum on March 30 showed the nebular stage already approaching. Its magnitude meanwhile fell from 8 to 9; also there was a nearly constant diminution till May. A luminous aureole developed in August, indicating the development of a gaseous nebula, with only the bright spectral radiations of hydrogen and the nebular lines.

Spectroscopic Binaries.—Lee gives measures on 19 new spectroscopic binaries, adding ι Cassiopeiae, γ Ophiuchi and α Pegasi to the list. Roberts inquires into the variation of the spectroscopic binary κ Pavonis, and Russell has calculated the mass ratios of Krueger 60 and Castor. Orbits of several spectroscopic binaries were investigated by Cannon and Plaskett, the latter of whom has discussed the errors of radial velocity work and their causes, concluding that the better determinations are accurate within one km. per sec. Campbell's second catalogue of spectroscopic binaries includes over 300 of these objects, which, with radial velocities, or motion in the line of sight, are now absorbing extensively the energies of the great observatories. Stebbins, from his discovery of eclipsing variables, directs attention to a new departure in accurate photometric observation furnished by the spectroscopic binaries. He finds β Aurigae an eclipsing variable, whose epochs of light minimum accord exactly with the times predicted from the spectroscopic elements derived by Baker. There is evidence, too, that the surface intensity of both components far exceeds that of the sun itself.

Radial Velocities.—Radial velocities are continued at Allegheny by Jordan and Daniels. Münch has given an exhaustive discussion of the radial velocities of Sirius, and Bélopolsky has extended his measurements to many of the standard stars, among them Arcturus and β Geminorum. Campbell reports very satisfactory progress of the radial-velocity work of the D. O. Mills expedition to the Southern Hemisphere. More than 3,000 spectrograms have been secured and measured, and two additional years of work have been provided for by Ogden Mills, son of the original donor. The Lick Observatory has published the detailed results of the expedition in a volume containing a catalogue of 150 stars whose radial velocities have been determined, and the velocities of about one-fourth of them are found to be variable. Campbell gives the results of a thorough discussion of the brighter helium or Class B stars, in or near the Milky Way, and whose

radial velocity with reference to the solar system is about 20 km. per sec. Also he directs attention to some peculiarities in stellar motions, finding that the velocities of stars are functions of their spectral types; and that planetary nebulae have perhaps been formed from stars through collisions with, or close approaches to, other massive bodies. Frost is investigating the sun's velocity with respect to stars of spectral type A, Adams reports a half-dozen stars with great radial velocities (96 to 170 km. per sec.), and ripe fruit of the spectroscopic method inaugurated by Sir William Huggins nearly a half century ago is now being gathered on every hand.

Nebulae.—Porter's work and that of Bauschinger have led to new catalogues of nebulae. R. Wilson observes the relation of the Orion nebula to the stars therein. Wolf discusses spectrograms of the "America" nebula, and Fath investigates the spectra of spiral nebulae and globular star clusters from the Lick and Mt. Wilson photographs. Fabry shows the advantages of applying the interference method to the study of nebulae. Pahlen connects the photographic forms of spiral nebulae with a type of logarithmic spiral, and Belot in his *Cosmogonie Tourbillonnaire* sets forth a novel and ingenious application of a swiftly moving vortex to account for the successive formation of the planets of the solar system. Wilde, first Halley lecturer at Oxford, develops the theory of celestial ejectamenta, Sutherland theorizes on spiral structure in nebulae, and Very makes the white nebulae galaxies.

Bibliography.—Puiseux, in the *Revue Général des Sciences*, and Stroobaut, in the compact little Belgian *Annuaire Astronomique* for 1912, give excellent resumés of recent astronomical progress, the latter fully summarizing the observations of Halley's comet at its recent appearance. Römer's *Adversaria* has been published by the Royal Danish Academy of Sciences. The scientific papers of the elder Herschel are at last, after nearly a century, in process of collection and publication, under Dreyer's capable editorship and the auspices of both the Royal and the Royal Astronomical Societies. Warren's *The Earliest Cosmologies* treats of the world concepts of the ancients. Markwick reviews in *The Observatory* the astronomical allusions in Milton. The Royal Astronomical Society of Canada issues an observer's Handbook, and the "Companion" to *The Observatory* is particularly useful to observers of meteors, doubles, variables and satellites. Cowell succeeds Downing as superintendent of the British Nautical Almanac, and the issue of 1913 is the first under his direction. The advanced calculations of theoretic astronomy have been greatly facilitated by the new logarithmic-trigonometric tables with 8-decimal places by Bauschinger and Peters. Whittaker has published a *History of the Theories of Aether and Electricity*. The Madrid Observatory has published its *Anuario*, and the 4th edition of Newcomb-Engelmann's *Populäre Astronomie*, fully revised by the Potsdam staff, has appeared; also a new star atlas and telescopic handbook by Norton, and Barritt's *Monthly Star Map* is of wide interest to amateurs. The 11th edition of the *Encyclopedia Britannica* contains many excellent articles on astronomy. *Round the Year with the Stars* by Serviss will enthuse many a student, whether young or old; and *The Spectroscope and its Work*, by Newall, deals acceptably, though in elementary fashion, with every phase of astronomical application of this instrument. Olcott's *Star Lore of All Ages* treats of myths and legends of the northern constellations. Vol. iii of *Transactions of the International Union for Co-operation in Solar Research* reports in extenso the Mount Wilson conference. Hinks has published a brief general treatise, and Pomona College has begun a popular serial. Other recent works are Trabert's *Lehrbuch der Kosmischen Physik* and Abbot's *The Sun*.

XXVII. GEOLOGY, METEOROLOGY, TERRESTRIAL MAGNETISM, AND GEOGRAPHY

GEOLOGY

DYNAMIC AND STRUCTURAL GEOLOGY

J. B. Woodworth

Isostacy.—The question whether the transfer of load on the earth's surface in the form of sediments from an area of erosion to one of deposition is competent to cause a rise of the denuded tract and a depression of an adjacent loaded zone has been a matter of much debate among geologists ever since the statement of the doctrine under the name of "isostacy" was put forth by Dutton. Just as Edouard Suess early in the year (*Amer. Jour. Sci.*, xxxi, Feb. 12, 1911, pp. 101-108) cried out "I must confess myself a heretic in all regarding isostacy," Dr. John F. Hayward of the U. S. Coast and Geodetic Survey stated (*Science*, Feb. 10, 1911) that geodetic observations have furnished proof that a close approximation to the conditions called isostacy exists in the earth and comparatively near the surface. According to these observations the isostatic compensation under the United States is nearly complete. The average both of excess and deficiency of mass in areas lacking compensation or balance is represented by a sheet of rock only 250 ft. thick having the average density (2.67) of the surface portion of the earth. This is the most cogent statement on the affirmative side of the controversy which has yet been made.

Dynamic Geology.—Aside from the problems of vulcanism and earthquakes stated elsewhere, but small advances have been made in dynamic geology during the year. John Millis (*Science*, xxxiv, 1911, p. 61) suggests as the initial step in the production of the oval hills of till called drumlins in the glaciated area the filling of hollows on the surface of a melting ice sheet. The ripple mark of certain layers of the Carboniferous Waverly series in Ohio maintain directions nearly northwest and southeast over so large an area that Jesse Hyde (*Journ. Geol.*, xix, 1911, pp. 257-269) believes the phenomenon to be due to wind-made waves swinging into parallelism with a shoal or shore on the south-southwest rather than to the undeflected direction of the prevalent winds of the time. The same writer calls attention (*Amer. Jour. Sci.*, xxxi, 1911) to the existence of an ancient land surface at the base of the Carboniferous coal measures in southern Ohio without trace of a soil bed.

Inexpert or casual observers in all countries are inclined to attribute picturesque and wild, steep-walled depressions in the earth surface to the more violent causes active in nature, such as volcanic explosions and the sudden fractures which give rise to earthquakes. Cliff Lake Gorge in the Madison valley in Montana is an example locally regarded as a volcanic crater long extinct. Dr. G. R. Mansfield (*Bull. Geog. Soc. Phila.*, ix, 1911) shows that the lake has been formed by landslides blocking a valley cut by running water in an ancient lava flow.

Coal Formation.—W. H. Twenhofel from a study of peat beds on Anticosti Island (*Amer. Jour. Sci.*, 1910) draws the conclusion that many of the evidences which have been adduced for the development of

coal beds from transported vegetable matter may be permissive of an origin through growth *in situ*. It is pertinent to note that in English-speaking countries the formation of coal through the growth of plants upon the spot where the coal is found prevails, while the French geologists hold to the hypothesis of transportation and deposition at a distance.

Structural Geology. — The vast area of undescribed rocks of the western mountain region yield each year important results in the light they throw upon the structure of the continent and its past life. W. J. Sinclair and Walter Granger in a recent paper (*Bull. Am. Mus. Nat. Hist.*, xxx, 1911, pp. 85-177) describe the older Tertiary beds of the Wind River and Big Horn basins. The writers believe that the alternating red and blue clays of the region represent arid and moist climatic cycles respectively. Prof. J. C. Merriam in another article (*Bull. Dept. Geol.*, Univ. of Calif., Nov., 1910) gives an account of the strata containing the remains of Tertiary mammals in Virgin Valley and Thousand Creek in northwestern Nevada. F. H. Knowlton brings to notice (*Science*, Sept. 8, 1911, pp. 319-322) the curious absence of dinosaurs in the Laramie and their presence in the overlying beds of the Fort Union series. The geological structure of the region between Albuquerque, N. M., and Kingman, Ariz., including the essential features of the Grand Cañon of the Colorado, is described by N. H. Darton (Bull. 435, U. S. Geol. Survey, 1910). This bulletin forms a handy *vade mecum* of geology for the visitor to the Grand Cañon. L. F. Noble (*Amer. Jour. Sci.*, xxix, 1910) contributes a detailed account of the strata in the Shinumo district of the Grand Cañon. The *Summary Report* of the Geological Survey Branch of the Department of Mines of Canada for 1910 (Ottawa, 1911) contains the results of much new work in the geological structure of the mountainous region of British Columbia. Mention may be made of the advances in the understanding of the real nature of the banded gneisses and schists regarded in Sir Charles Lyell's time as metamorphosed sediments in all instances. Chas. H. Clapp reports on certain examples on Vancouver which prove to be altered plutonic rocks.

Alaska.—No surveys of recent years have so much extended our knowledge of the geological structure of the continent as those carried on in Alaska, under conditions of travel the accounts of which, if written, would constitute the story of the overland search for the Northwest Passage. Alfred H. Brooks, of the Geological Survey, and a corps of fellow geologists have in numerous reports shown piece by piece that this vast region is a continuation of the general geological structure of the western Cordilleras. In a recent article (Professional Paper 70, 1910) he describes the geological structure of the Mt. McKinley region. Dr. Phillip Smith and H. M. Eakin, in *A Geologic Reconnaissance in South-Eastern Seward Peninsula and the Norton Bay-Nulato Region, Alaska* (Bull. U. S. Geol. Survey, 449, 1911), describe the geology of that heretofore little known district. Other reports are newly out on the geology and mineral resources of the Nizina district, by Moffit and Capps, and on the Prince William Sound region by Prof. U. S. Grant and D. F. Higgins (Bulls. 443 and 448).

Eastern United States.—The progress of structural geology in the longer studied rocks of the eastern United States is shown by closer distinctions in matching the records of adjacent ancient sea-bottoms and land-surfaces, and in the details of structure originating in the fracture and displacement of rocks. Prof. Cushing (*Amer. Jour. Sci.*, Feb. 1911) represents the geographical conditions of the Adirondack region during the Palæozoic era as involving alternating subsidence and elevation on the eastern and western borders of the tract. It seems to him unlikely that the Adirondack area has been entirely submerged since the earliest geological records. The geology of the popular Thousand Island region of northern New York is described

by Messrs. Cushing, Fairchild, Reudemann, and Smyth in a recent bulletin (No. 145, 1910) of the State Museum. Dr. John M. Clarke, in the 30th *Report of the N. Y. State Geologist* (Museum Bulletin 149, 1911), writes most lucidly on the geology of the Gulf of St. Lawrence, including the Magdalen Islands. In *A Contribution to the Geologic History of the Florida Plateau* (Publication 13, Carnegie Institution, Washington, 1910), Dr. T. W. Vaughan gives an account of the known geological structure and changes of level of Florida. Contrary perhaps to the general opinion, coral reefs are stated to have played an important part in building up the peninsula only in Pleistocene time or during what is commonly known as the glacial period. The extensive tunnels excavated beneath New York City and its vicinity in the construction of subways and the new aqueduct have exposed endless details of the local rock structure, which Dr. Berkey has laboriously recorded, together with their significance for further engineering work. ("Areal and Structural Geology of the Southern Manhattan Island," *Annals N. Y. Acad. Sci.*, xix, pp. 247-282; also *Geology of New York City Aqueduct*, N. Y. State Museum Bull. 146, 1911.)

Stratigraphy.—The comprehensive attempt at a revision of the North American geological stratigraphic sequence mentioned last year is followed this year by a learned discussion of the same subject by E. O. Ulrich, with especial reference to the Palæozoic strata. ("Revision of the Palæozoic Systems," *Bull. Geol. Soc. Amer.*, 1911.) The paper is noteworthy for its treatment of crustal displacements in relation to the shifting of areas of marine deposition. Like Prof. Scheuchert, the author, ascribes limited areas at any one epoch to the seas which covered portions of the North American continent in the early ages. The modifications proposed in the geological time scale are too extensive to be specifically mentioned in this note. It is clear that the old classification of geological formations does not adequately express geological history in the light of the most recent studies. No classification can be satisfactory which does not furnish suitable terms for the designation of successive epochs in the development of the sediments of the several continents. These contributions are notable advances towards the construction of a system which is to fulfil this requisite.

Bibliography.—Want of space forbids more than mention of the various publications of the several state geological surveys. That of Tennessee under Ashley has adopted the innovation of issuing a monthly journal setting forth the results of the survey in popular form. *The Lithology of Connecticut*, by Prof. Joseph Barrell and G. F. Loughlin (Bull. 13, State Geological and Nat. Hist. Survey, 1910), contains a comprehensive description of the varieties of rocks of the state in terms adapted to the general reader. Circular No. 2 of the Oklahoma Geological Survey, Dr. C. N. Gould, Director, gives a brief account of the geological history of that state. The following state surveys have recently issued reports dealing with the geological structure controlling the underground distribution of natural resources: Washington, Prof. Henry Landes, Director; West Virginia, Dr. I. C. White, Director; Illinois, Dr. Frank W. De Wolff, Director. (See XXVII, *State Geological Surveys.*)

Much geological structure is described in reports dealing primarily with the occurrence of ore deposits. A notable recent contribution of this nature is the report on the ore deposits of New Mexico (Professional Paper 68, U. S. Geol. Survey) by Messrs. Lindgren, Graton, and Gordon. (See *Economic Geology, infra.*)

The U. S. Geological Survey has issued the following folios of the geologic atlas of the country since the last volume of the YEAR BOOK: 170, Mercersburg-Chambersburg, Pa.; 171, Engineer Mountain, Col.; 172, Warren, Pa.-N. Y.; 173, Laramie-Sherman, Wyo.; 174, Johnstown, Pa.; 175, Birmingham, Ala.; 176, Sewickley, Pa.; 177, Burgettstown-Carnegie, Pa.; 178, Foxburg-Clarion, Pa.; 179, Pawpaw-Hancock, Md.-W. Va.-

Pa. Upwards of 52 monographs, 71 professional papers, and 457 bulletins, largely dealing with structural geology, have now appeared as a result of the operations of this survey.

Of interest to legislators is the compilation of the statutes concerning the organization of state geological surveys (Bull. 465, U. S. Geol. Survey) by Dr. C. W. Hayes. In the educational field, *Elements of Geology* by Eliot Blackwelder and H. H. Barrows is a welcome addition to the number of reliable American text-books now current. (Amer. Book Co., 1911.)

ECONOMIC GEOLOGY

F. L. Ransome

Christiania Region.—That there is no real boundary between pure science and so-called economic or applied science has been increasingly apparent ever since Pasteur's brilliant illustrations of that truth; and to-day he who would record the advances in economic geology finds great difficulty in determining where lies the zone of gradation between his branch of science and what is generally termed geology in the broader sense. Thus, the work of V. M. Goldschmidt on the contact metamorphism of the Christiania region, while not devoted professedly to ore deposits, is nevertheless of exceptional importance to students of ore genesis. The memoir describes in great detail the changes produced in the early Paleozoic sediments of the Christiania basin by the intrusion of masses of igneous rock that have themselves been the subject of a series of classic petrological monographs. Ore deposition was an essential part of the metamorphism. A few only of the important conclusions reached by Goldschmidt can here be briefly mentioned. He finds that the change from fossiliferous sedimentary rocks to crystalline metamorphic rocks took place under a rock over-burden about 1,500 m. thick or under a pressure of 400 atmospheres. There was no appreciable addition of water to the sediments from the molten igneous rock (magma), which did, however, give off metals, as volatile chlorides and fluorides, together with silica, alumina and alkalies. He distinguishes two stages of metamorphism: (1) normal contact metamorphism, effected at temperatures between 1,000 degrees and 1,200 degrees C. by the magma prior to its consolidation, and consisting essentially of a recrystallization of the sediments without actual melting; and (2) pneumatolytic contact metamorphism, produced by the expulsion of hot gaseous constituents as the magma crystallizes and by the chemical reaction of these with the sedimentary material, especially with the calcareous beds, whereby the latter may be greatly changed in composition and receive large additions of metallic constituents.

Lake Superior Region.—In this country, the most important publication in economic geology during the year was undoubtedly the monograph on the Lake Superior region by C. R. Van Hise and C. K. Leith. This brings together the final results of many years' labor by Van Hise and numerous assistants. During this period monographs were issued on the various iron districts, and Van Hise's great *Treatise on Metamorphism* (Monograph, U. S. Geological Survey, No. 47) was an outgrowth of his studies in these pre-Cambrian rocks. The present monograph marks the completion of a gigantic task carried out with remarkable ability, persistence and success. Van Hise's former view that the iron ores were concentrated by percolating water from lean ferruginous sediments has been modified or amplified by the conception that the ores are genetically connected with eruptive rocks, which supplied the iron to the sedimentary rocks during their deposition, perhaps in part as magmatic emanations.

Tertiary Gravels of the Sierra Nevada.—Another publication of much interest and importance is Lindgren's volume on the Tertiary gravels of the Sierra Nevada, California. These deposits are an attractive subject, not merely from their great economic importance, but from the

romantic history of their early exploitation and from their significance in relation to the geologic development of the Sierra Nevada range. Lindgren traces the old crest line of the range in Cretaceous time and shows that, after faulting along the east flank of the range, which gave the whole mountain mass a tilt to the west, the Tertiary rivers, which deposited the gravels, headed in a region of lofty peaks and ridges to the east of the Cretaceous divide and in the same general region where the modern rivers take their rise. He concludes that the fossil flora of the gravels is Miocene, and agrees with Holmes, Sinclair and other careful investigators that the famous Calaveras skull, accepted by J. D. Whitney as proof of Neocene man in California, is unworthy of credence as scientific evidence. The gold of the gravels is detrital and has been concentrated from countless veins during the erosion of the mountains.

Non-Metalliferous Deposits.—The literature of non-metalliferous deposits has been enriched during the year by the first volume of Stutzer's excellent treatise in which is described and discussed the occurrence of graphite, diamond, phosphates and sulphur.

Geology and Engineering.—The important bearing of geology on many engineering problems has received increasing recognition, notably in the case of the troublesome slides along the Panama Canal; and few engineers would now think of planning great locks or dams without careful preliminary geologic examination, with particular reference to the location of fault zones and other natural tectonic weaknesses.

Geophysics.—In the field of geophysics, the Geophysical Laboratory of the Carnegie Institution of Washington has continued its carefully planned program of quantitative investigations that have already proved so fruitful and which promise to throw much new light on the perplexing problems of ore genesis. (See XXVII, *Mineralogy and Petrography.*)

Necrology.—Even this brief outline would be incomplete without reference to the death, on March 28, 1911, of Dr. Samuel Franklin Emmons, to whom more than to any one man was due the development of economic geology to its present high plane in this country. He began his work in the sixties when geological exploration in the far west could be accomplished only under military protection, and served with distinction on the U. S. Geological Survey from its organization until his death. The work by which he is best known is his report on the Leadville District, Colo., but his other contributions to science were many and important. Great as was his influence for good among his scientific colleagues, it did not end there; he enjoyed to an extraordinary degree the confidence of mining men throughout the country, and left to the geologists who came after him a priceless heritage of trust and good will on the part of the public.

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STATE GEOLOGICAL SURVEYS

FRANK W. DE WOLF

Functions.—Investigations by the state geological surveys during the last few years have been stimulated because of the growing need for accurate inventories of natural resources, and also because the public is coming to appreciate the funda-

mental value of the past work, which has proceeded rather quietly for many decades. While the function of the surveys is chiefly to aid in the development of state mineral resources, and in some cases to investigate soils, forests, and highways, nevertheless a large annual contribution is made to the fundamentals of geological science.

There are 37 active state surveys employing permanently and temporarily enough geologists to equal the full time of about 130 men. Annual expenditures probably exceed $450,000. Additional men and funds become available in most of the states through coöperation with the U. S. Geological Survey and the federal bureaus of Soils, Forestry, Highways, and Mines. Thus the continual researches have a large and cumulative influence throughout the country for enlightenment and for scientific development of natural resources.

Appointments.—The American Association of State Geologists meets each year during the Christmas holidays and again in a spring conference with the coöperating bureaus. A promising new survey has been organized in Minnesota under the direction of W. H. Emmons, formerly of the U. S. Geological Survey and of the University of Chicago. This followed the death of Prof. C. W. Hall, who was advanced in years. Another important change occurred in the appointment of Prof. G. F. Kay, of the University of Iowa, as State Geologist to succeed Dr. Samuel Calvin, deceased. Dr. Calvin's untimely death removed an active and venerable scientist from the ranks of the state geologists. In October Prof. C. N. Gould resigned as director of the Oklahoma Survey, where he had been particularly aggressive since its organization. He was succeeded by Prof. D. W. Ohern. In South Carolina Dr. M. W. Twitchell succeeded Earl Sloan, whose term of appointment expired.

Topographic Maps. — Topographic surveys in 14 states were continued in coöperation with the U. S. Geological Survey; each bears one-half the expense. Altogether the finished work equals about one-third of the area of the United States. Topographic maps are now regarded as necessary before detailed geologic surveys can be made satisfactorily.

Economic and Detailed Areal Surveys.—A large share of attention, and on an average about one-third of the geologic funds, in the various states are devoted to economic and detailed areal surveys. The more important results of the work of 1911 are summarized below.

Building Stones.—All surveys collected more or less information about building stone. A report of the structural materials of Oklahoma was published; and others were completed for the granites of that state and of New York. Granites of South Carolina were examined. Investigations of marble were continued in Vermont and were completed for early publication in Alabama and Tennessee. Various stones were examined and tested in Ohio and Colorado.

Cement and Concrete Materials.—Publications were made during the year on cement materials of Washington and Tennessee, and were in press for the state of Illinois and for the Lehigh district in Pennsylvania. Examinations were under way for the abundant materials of the Alabama coastal plain area, and for the Palæozoic region of northwestern Georgia. In Iowa an investigation of concrete materials and of road ballast received special attention.

Clay Materials and Industries.—Bulletins were published on clay materials and industries of Oklahoma and, similarly, on the deposits of western Tennessee. Results were prepared for publication in Colorado and were collected in Kansas and Nebraska. Fire clays were especially examined in Illinois and in western Pennsylvania. Reports on paving bricks and pottery were in preparation for Ohio. Quartz and feldspar for use in pottery and the arts were investigated in New York state.

Coal and Lignite.—The importance of lignite in those western states which have no adequate supply of high-grade coals has recently been brought to public attention. Investigations were made during the past year with the view to gas pro-

duction from the deposits in northwestern South Dakota and in North Dakota between Little Missouri and Yellowstone rivers. The lignite of the Alabama Coastal Plain was likewise examined.

The first volume of a report on coal mining in Arkansas appeared early in the year, and the second volume was in preparation. In Illinois a description of the coal fields and a collection of chemical data appeared, as well as certain coöperative reports on quadrangle surveys of important coal districts. The Coosa coal field of Alabama, which was surveyed some years ago, was reëxamined for a report at any early date. Calorific tests of coal were also in progress. Certain county reports in the coal fields of West Virginia were in press. The Broad-Top field of Pennsylvania, which occurs in a region of interesting mountain folding, was selected for study during the year. Important investigations of the coals of Tennessee and of Oklahoma were carried on, and a thorough report on correlation, stratigraphy, quality, and commercial importance of Missouri coal fields was completed in coöperation with the U. S. Geological Survey.

Copper.—A report on the Keweenawan copper-bearing rocks of Michigan which has been in progress several years was completed for publication. Other interesting studies were carried on in the Virgilina district by the surveys of Virginia and North Carolina, in coöperation.

Gold.—Four states made special studies of gold resources during the year. A liberally illustrated bulletin on placer deposits of California was distributed. Other surveys included the South Pass district, Wyoming, four counties in Virginia, and the various gold deposits in Tennessee.

Iron.—Activity in iron studies in states which were important producers formerly, but recently less important, is significant, and is perhaps due to the conservation movement. The scarcity of high-grade ore is now realized, and it is probable that poorer deposits must before long be developed. A report on the Iron River district in Michigan and another on iron and iron mining in New Jersey were published. At the close of the year reports were imminent on iron making in Alabama (third edition); iron ores of Maryland; Missouri; the Florence District of Wisconsin; Virginia and Tennessee. In South Carolina the electric smelting of iron ores was investigated.

Lead-Zinc.—Reports on the deposits of zinc in northwestern Illinois and in Tennessee were published early in the year. Field work was in progress for the lead-zinc fields of Oklahoma and for the Aurora region, Missouri. In the latter state, important laboratory investigations were continued on the oxidation and transfer of metallic sulphides.

Oil.—The last five years have seen a tremendous increase in the output of petroleum, and state surveys have given the subject much attention. Early in 1911 a report on the Bremen field in Ohio was distributed. The two reports on the Clarion and Sewickley quadrangles of Pennsylvania were prepared and published in coöperation with the U. S. Geological Survey. These present important investigations of the relation of structure to oil circulation and accumulation. A report on the Illinois oil fields showed that important pools depend on structural relations and that many virgin areas warrant prospecting. An elaborate report on the southeastern Illinois oil fields and one on the Carlinville area were completed. The Carlyle oil field of Illinois was investigated in coöperation with the U. S. Geological Survey. Maps were prepared in California for the following oil fields: Santa Barbara, Santa Maria, Cat Canon, Lompoc, Ventura County, and Whittier-Olinda. The State Mining Bureau continued its efforts to protect investors from "fake" companies. A coöperative survey was made in the Fayette-County field of Alabama. In Oklahoma work was completed for the Vinita quadrangle, which, with the Nowata, Pawhuska, and Claremont quadrangles, practically finishes the work of northern Oklahoma. The Lander oil fields of Wyoming were investigated. Work continued as usual in West Virginia

and will be published from time to time in county reports.

Water Resources.—Many states gave considerable attention to the investigation of surface and underground waters. Reports on underground resources were published or prepared for early publication, after the study of well records and structural relations. A study of the artesian waters of the coastal plains has been in progress for several years under coöperation between the state and federal bureaus. Reports were prepared for Alabama, western Florida, Maryland, Mississippi, North Carolina, and Virginia. An interesting investigation was made of Saratoga Springs, New York, because of their recent depletion and their possible resuscitation. Connecticut investigations, which will last two or more years, were begun. Similar studies were under way in Colorado, New Jersey, North Dakota, Oklahoma, South Carolina, and South Dakota. In the last-named state a demonstration of the lowering of artesian head through careless waste was brought to public attention. In the state of Washington hydrographic surveys have been made for the arid lands of the central region, with a view to irrigation.

Surface-water investigations involving continuous gauging of streams, preparation of profiles, selection of power sites, and, in some cases, provision for drainage of swamp or overflowed lands have become important in many states. In a dozen or more such work was carried on by the geological surveys, frequently in coöperation with the U. S. Geological Survey or with the U. S. Department of Agriculture.

Miscellaneous. — Among various other economic investigations published or under way during the year in several of the states should be mentioned the following: salt deposits and industry of Michigan; phosphates of Florida; peat deposits of Connecticut, Florida, Ohio, South Carolina, and Wisconsin.

Various resources of the southern Appalachians which are related to the metamorphism of the region were studied as follows: graphite and paint ores in Pennsylvania; slates in Pennsylvania and Virginia; mica and pegmatites in North Carolina; asbestos, talc, soapstone, etc., in Georgia, Pennsylvania, and Alabama; rutile in Virginia.

Areal Surveys.—Besides the above-mentioned investigations of strictly economic importance, most states carried on general areal and stratigraphic surveys which were highly economic in character, or at least indirectly so. Reports were prepared for publication in folios in coöperation with the U. S. Geological Survey, or, more commonly, as county reports or quadrangle bulletins. An exceptionally fine new map, on a scale of 1:500,000, was published for Virginia. Similar work comprised a large share of state-survey activities, but was chiefly of such local character as not to command space for presentation here.

Aside from economic investigations, many state surveys continued important studies of stratigraphic, historical, and paleontological geology which affected correlations and the accuracy of future maps.

Soil, Forest, and Highway Investigations.—In many states where special bureaus for work on soils, forests, and highways did not exist the geological surveys looked after the work alone or in coöperation with federal or other state bureaus. A report was published on soils and soil erosion in Mississippi. Work was finished for six counties in West Virginia and was under way for an equal number. In Wisconsin soil surveys were completed for three counties and begun for two additional areas. In Washington the agricultural lands west of the Cascades have been completely surveyed, and also 500,000 acres in the arid region of Central Washington. Northern Michigan soils and surface geology was described, and general soil work was in progress in Florida and New Jersey. In Indiana a belt of territory running across the state, and two counties wide, was selected for survey. A county survey in Tennessee was prepared in coöperation.

Bulletins on roads and road conditions were distributed for Alabama, Maryland, and Oklahoma. Similar in-

vestigations were actively under way in Florida, Iowa, and Mississippi.

MINERALOGY AND PETROGRAPHY

CHARLES PALACHE

Mineralogy.—We are indebted to the Geophysical Laboratory of the Carnegie Institute for improvements in the gas thermometer which have extended its range some 400 degrees, to a maximum of 1,550 degrees C., the melting point of anorthite and only 200 degrees short of the melting point of platinum. The accuracy of the reading at this high temperature is estimated at 2 degrees. Recent investigations include a study of the conditions which govern the formation of the various sulphides of iron; the relation between orthoclase and microcline; and the compounds and their relations formed in mixtures of the oxides, lime, alumina and silica. Previous accounts have been given of the behavior of these oxides in mixtures of two components, but this is the first attempt to work out the vastly more complicated relations existing in a three-component system at the high temperatures involved. The results are so far of interest in revealing the nature of Portland cement clinker; they promise to be of practical importance to the cement manufacturer in determining the best formula for cement composition.

Instruments.—The examination of the many excessively fine-grained crystalline products made in these studies, which can be tested for purity chiefly by optical methods, has led Wright to develop a number of improvements in the petrographic microscope and its use; and to an extensive investigation into optical theory. Two improved forms of specific gravity balance have been described: Rogers adapts the beam balance of Penfield so as to read off the specific gravity directly on the graduated beam; Kraus so modifies the Jolly spring balance as to dispense with one of the necessary readings and to increase the accuracy of the instrument.

Textbooks.—An excellent descriptive mineralogy intended for general courses in the subject comes from the pen of Prof. Kraus of Michigan University.[7] Tables for the determination of minerals by physical character by the same author appear to be an improvement in some respects over their numerous predecessors.[8]

A more notable contribution to the literature of mineralogy is the latest work of Tutton.[9] In this book the foremost physical crystallographer of England has given us for the first time an adequate English substitute for the standard German work of von Groth covering all aspects of practical crystallography.

Gem Minerals.—In the past three years interesting information has been given in *Mineral Resources of the United States* (U. S. Geol. Survey) of the sources of the garnet and chrysolite gems of New Mexico and Arizona; and especially of the many turquoise and variscite deposits of Nevada, Utah and other western states. The two latter minerals have for some years constituted the most important American gem products. Another survey report, by Bastin[1] brings together all extant information on the Maine pegmatites and their valuable gem contents. An instructive parallel to these is found in the wonderful gem-bearing pegmatites of Madagascar recently fully described by Duparc[5] and Lacroix.

Petrography.—The literature of this subject is largely devoted to matters of classification. Harker[6] maintains his defence of the importance of great regional types of rocks, determined largely by the greater tectonic features of the globe. This idea is at the base of the division of all rocks into "Atlantic" and "Pacific" groups or races. The concept is generally rejected by American students, as, for example, by Daly.[4]

Gaseous Emanations of Volcanoes.—The importance of the gaseous emanations of volcanoes is receiving emphasis from several points of view. Brun[3] reports at great length the results of analyses of rocks and gases from many lands, with the general result of finding among the gaseous

emanations a remarkable absence of water and a predominance of chlorides, fluorides and hydrocarbon compounds. He considers that for the most part the great clouds of so-called steam sent forth in volcanic eruptions consist of these substances and are essentially anhydrous. With this view Daly[8] is in substantial agreement in his paper, "The Nature of Volcanic Action." Daly's main theses, however, are of quite another nature. He regards volcanic action as primarily a deep-seated phenomenon, due to mechanical intrusion from a universal substratum of basaltic magma through a higher, acidic (granitic) earth shell; and he regards the gases (whatever be their nature) as of vast importance as heat carriers during the eruption, by a process of what he calls "two-phase convection," or the formation of strong currents in the magma through the formation and rising of bubbles of gas in the magma. Like Brun, Daly regards water in its relation to volcanic eruptions as largely an unimportant surface agent, and considers that it will be possible, and necessary, to distinguish between true magmatic eruptions and those due to steam explosions, to which he applies Suess's term of *phreatic* eruptions.

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EARTHQUAKES AND VOLCANOES

Harry Fielding Reid

Earthquakes.—The most serious earthquake of the year in America was that which occurred in Mexico in the early morning of June 7. The center of the disturbance was in the neighborhood of Mt. Colima, not far from the Pacific Coast. The shock came at 4:26 in the morning; it caused great damage and killed many persons within a distance of perhaps 100 miles of its center. A second shock the next day about 5 p. m., though much less severe, added to the damage already done. It is quite probable that the seat of the disturbance extended further toward the east, as the city of Mexico, 300 miles distant, was severely shaken, a number of houses were overthrown, cracks formed in the National Palace and several of the churches, and over 60 people killed. Mexico is built on an old lake bottom and the incoherent character of the foundation is probably the cause of the great damage in that city. Fissures were reported in the streets and the tracks of the street railways were twisted, in one place sufficiently to disturb traffic for some time. The accounts of the shock are meagre, but there can be no doubt that the earthquake

was one of very great violence. As noted later, the volcano Colima became violently active.

A few seconds after 2 o'clock in the afternoon of July 1 a large part of central California was shaken by a fairly strong earthquake. No very serious damage was done, but the memory of the earthquake of 1906 made the people timid and they were greatly frightened. The center of the shock was not far from Mt. Hamilton, at which place cracks were formed in some of the brick buildings and the pier of the great telescope was shifted three-fourths of an inch on its base, but fortunately was not injured. Furniture was displaced a foot or more. At Coyote, in the Santa Clara valley, a few miles to the southwest, the shock seems to have been about equally strong; water-tanks were overthrown and many windows were broken, etc. In the neighboring towns the disturbance was not so strong, but nevertheless it produced quite a panic, especially in San Francisco. The shock was felt as far as Redding in the north, a distance of about 240 miles, and was also reported at Los Angeles, to the southeast, a distance of 300 miles, but in the latter case it was extremely slight. It was felt at Stillwater, Nevada (240 miles). In all probability the shock was distinctly felt over a land area of 100,000 sq. miles. The distribution of the intensity was somewhat like that of the great earthquake of 1906, *i. e.*, the intensities were stronger on the great alluvial valleys of California than on the mountain ranges. In the central Sacramento and San Joaquin valleys the shock was quite strong, whereas in the Sierra mountains it was extremely slight; several places in the mountains reported not having felt it at all. Still further east, at Carson City, Nev., it was fairly strong, but was distinctly weaker at Virginia City and Reno. The delicate earthquake instruments at Mount Hamilton, at Santa Clara College near San José, and at Berkeley were thrown out of adjustment by the shock, so that their records were very defective. The times of beginning, however, at these stations point to a center not far from Mt. Hamilton. Slight local shocks had been felt at Mt. Hamilton on Dec. 12, 15, 19 and 31, 1910. During the two months following the earthquake, 65 after-shocks were felt, or recorded, at Mt. Hamilton. A smaller number are also reported from Santa Clara.

Moderate shocks were felt at Nome, Alaska, Nov. 20, 1910, and at Fairbanks, Jan. 7, 1911; a slight shock was also reported from Yakutat early in Sept. On Sept. 21, a severe earthquake was felt at Valdez and the surrounding country. The military cable was broken very near Valdez.

Moderate shocks were felt at Imperial Valley, southern California, on Dec. 27, 1910; at San Miguel Island on March 28, 1911; at Oxnard and Los Angeles on May 10; in western Riverside County, Cal., on Aug. 11 and 21; at Ellensburg, Wash., July 4, and at Bellingham, Wash., on Sept. 28.

During the month of November, 1910, twelve shocks were felt in Esmeralda County, Nev., five being on the 21st. A few of these were fairly strong shocks. A later shock came on the night of Dec. 21-22. A fairly strong shock occurred in southeastern Arkansas on March 31, 1911. It was felt over an area of about 18,000 sq. miles in the states of Arkansas, Louisiana, Mississippi and Tennessee.

On June 2 the James River Valley, in the southeastern part of South Dakota, was visited by a moderate earthquake which was felt apparently over an area of about 40,000 sq. miles, but did no damage. Slight shocks were felt in the neighborhood of Ogdensburg, N. Y., Jan. 29, and near Cæsar's Head, N. C., April 21.

A shock, in the neighborhood of Mazatlan, on the west coast of Mexico, April 7, caused some damage to property. Slight shocks were felt near Lake Ilopango, San Salvador, Dec. 17, 1910; and very strong shocks in the western part of the Republic of Panama, Dec. 21-22; but they were slight in the Canal Zone.

In the latter part of 1910, a violent shock was felt at sea south of Jamaica, Oct. 31, but was not noticed on land. Moderate shocks were felt in St. Vincent, Nov. 6; in

Fort de France, Martinique, Nov. 18; and in Santiago, Cuba, Dec. 9. A number of houses were destroyed and several people injured, by an earthquake in St. George, Granada, on May 31, 1911. A shock, felt in the western part of Hayti and in Turk's Island to the north, on Oct. 6, 1911, threw the people of Port-au-Prince into a panic, but did little damage. A severe earthquake in the middle of Sept., 1911, caused the death of many people in the northern part of Chile. Three heavy shocks were felt at Guayaquil, Ecuador, a few days later.

Many minor shocks in the Philippine Islands are reported by the Philippine Weather Bureau; but no important shock has been felt during the past year. Many shocks took place at the time of the eruption of Mt. Taal.

Volcanoes.—About 40 miles south of Manila, in the Island of Luzon, lies Lake Bombon, about 15 miles long and 9 miles wide. In the middle of this lake the volcano of Taal rises as an island. The island itself and the shores of the lake are inhabited by natives engaged in agriculture. Taal has had a number of violent eruptions since the early Spanish occupation of the Philippines, but none of them apparently was more violent than the short eruption of Jan. 30, 1911. On the evening of Jan. 27 great masses of black cloud poured from the crater, accompanied by subterranean noises and frequent light earthquakes. This condition continued with more or less variation until the night of Jan. 29-30. About one o'clock, on that night, the explosions became very violent, and shortly after 2 o'clock the greatest explosion occurred, the noise of which is reported to have been heard at a distance of 300 miles. Immense quantities of black ashes were shot up from the crater, forming a cloud, in which there occurred many brilliant electrical discharges. This seems to have exhausted the eruptive force of the volcano and it quieted down; in two days it was simply emitting puffs of white steam; a week later it had resumed its ordinary condition. As in former eruptions no lava was poured out of the volcano, all the material ejected being in the form of dust and stones thrown into the air. The quantity of dust thrown out was enormous, the greater part being carried to the west, where it attained a thickness of 31 in. as far as six miles from the crater. It was noticeable on roofs and plants at a distance of 25 miles. The suddenness of the explosion and the great number of people living on, or close, to the volcano resulted in the death of over 1,300 persons and the destruction of much property. Everything over an area of 90 square miles was laid waste. Large waves, raised on the lake, invaded the surrounding shores and completed the destruction begun by the volcano, so that many of the smaller villages were entirely annihilated. The volcano itself and the surrounding country seem to have been depressed from three to six feet by the eruption. During the activity of the volcano many earthquakes occurred, some of which were felt at Manila, 40 miles distant. The seismograph in the Weather Bureau, at Manila, recorded 197 shocks on Jan. 28; 113 on Jan. 29; 96 on Jan. 30; 199 on Jan. 31, and 127 on Feb. 1. After this the daily number rapidly decreased, so that by the middle of February only one slight shock per day was recorded. It is rather remarkable that on Jan. 29 and 30 the number of shocks recorded was only a little more than one-half the number recorded on Jan. 28 and 31, and that at the time of the most violent explosion of the volcano no shock was recorded.

On Jan. 7, at the time of the great earthquake in Mexico, Mount Colima, near the coast, 300 miles west of Mexico City, became violently active; great quantities of ashes were thrown into the air, and lava poured out from the side of the mountain. Much damage was done to the surrounding country and many people were killed, though it is uncertain whether the deaths are to be ascribed to the earthquake or to the volcanic eruption. The volcano soon grew quiet, but on June 17 it threw out enough dust and ashes to be strongly noticeable in Mexico City;

and again on July 12 there was renewed activity. This is the most serious eruption of Colima since 1869. Mt. Bacalar, in Yucatan, which has not heretofore shown any signs of life, was reported in activity at this period, but the accuracy of the report is doubtful.

On May 1 the volcano Ometepe, in Lake Nicaragua, became active, but did no damage.

On Sept. 2 Capt. Petersen, of the schooner *Elvira*, witnessed a violent eruption in the Bogoslof Islands, Alaska. It began about 4 a. m. and continued until the evening. The islands seemed to be enveloped in flames and smoke, and many violent explosions were heard. The next morning several small new islands were seen to have been added to the archipelago and many changes had taken place in the group. A few weeks later the volcanoes Shishaldin and Pavlof were reported in moderate eruption.

METEOROLOGY AND CLIMATOLOGY

Robert DeC. Ward

METEOROLOGY

Aeronautic Charts.—America is not to be behind Europe in putting the results of her meteorological knowledge in such form that they will be available for the use of aviators and aeronauts. From Blue Hill Observatory (Mass.), a center of meteorological research of the highest scientific standing, comes a publication, the first of its kind, which is significant of the practical turn which is being given to meteorological investigation. Professor A. Lawrence Rotch, Director of the Observatory, and Andrew H. Palmer, Research Assistant, have prepared a set of charts intended primarily for those who "navigate the ocean of air." These charts embody the results of observations made at Blue Hill during the past 25 years, as well as those obtained from the trade-wind region of the Atlantic Ocean on several expeditions in which Professor Rotch coöperated. While the charts relate only to portions of the United States and of the Atlantic, they are highly important as pioneer work of a thoroughly and immediately practical kind.[17]

Studies of Wind Velocity and Direction.—Another contribution, along similar lines, is A. H. Palmer's study of the wind velocity and direction in the free air as shown by kite and cloud observations at Blue Hill, and by *ballons-sondes* observations secured during 1904-07 from St. Louis. This investigation brings out (1) the general increase in wind velocity with height; (2) the rare occurrence of gusts of wind below low heights; (3) the frequent clockwise and occasional counter-clockwise change of direction with height; (4) the shallow character of easterly winds; and (5) the relative frequency of ascending as compared with descending currents.[15]

Cloud Formation.—Much light on the formation of clouds is obtained from H. H. Clayton's study of the data obtained by means of kites sent up from Blue Hill. Here again the practical use of such data is clearly brought out; for it is by means of just such studies as these, which show the conditions leading to cloud formations of various kinds, that weather changes may some day be predicted.[4]

Free Air.—The free air data obtained by means of 896 kite and 117 captive-balloon ascensions from Mt. Weather Observatory in the three years July 1, 1907,—June 30, 1910, have been summarized by Dr. William R. Blair, in tabular and graphic form, in "Summary of the Free Air Data at Mount Weather Observatory for the Three Years, July 1, 1907, to June 30, 1910" (Bull. Mt. Weather Obsy., Vol. IV, Part 2, 1911, pp. 25-63). Diagrams of temperature gradients are given and charts show wind directions at different altitudes. Prof. Alfred J. Henry has studied the temperatures and pressures at certain summit and base stations in the Rocky Moun-

tains, using simultaneous records obtained at Corona (11,660 ft.) and Denver (5,347 ft.); and at Pikes Peak (14,111 ft.) and Colorado Springs (6,098 ft.), thereby increasing our knowledge of the character of the changes in these phenomena which actually take place under varying weather conditions and at different altitudes.

Physical and Dynamical.—On the physical side of meteorology, H. H. Kimball, at the Mt. Weather Observatory, has continued his work on solar radiation. It appears, as has been ascertained by others also, that the "solar constant" is a variable, hence the term "constant" is somewhat misleading. There is strong evidence that the atmospheric transmissibility undergoes marked changes which are nearly everywhere synchronous over considerable portions of at least a hemisphere, and that diminished transmissibility is accompanied by a diminution in temperature and in temperature amplitude. These fluctuations do not coincide with variations in sunspot numbers or in solar prominence frequency.[12] The polarization of skylight has been found to be intimately connected with changes in the mechanical and optical haze conditions of the atmosphere.[13] Professor Bigelow's studies of the general circulation of the atmosphere have been continued.[1] Professor W. J. Humphreys has summarized the observations of meteorological phenomena observed during the passage of the earth through the tail of Halley's comet, and says that "it would be rash, without additional evidence, to conclude that the comet was the principal or even partial cause of any of the appearances."[10] Professor Humphreys has also thrown light upon the controls which produce the permanent high pressure belts at about latitude 30°, North and South, in pointing out that the cold ocean currents play an important part in their formation. As these "permanent highs" are of great importance in controlling the climates and the weather of adjacent continental areas, it is clearly of interest to ascertain how these areas are caused, and why they shift their positions.[11] A. H. Palmer has investigated pressure oscillations of short wavelength observed at Blue Hill Observatory, and finds them due (1) to undulations set up at the horizontal boundary between two air strata, of which the upper is lighter and in which the rate or direction of movement of one differs from that of the other; and (2) to the convectional currents in the agitated air mass of thunderstorms.[16] An important collection of discussions on dynamic meteorology and hydrography, by Professor V. Bjerknes and others, has been published during the year by the Carnegie Institution. This series of studies is mathematically of too advanced a character for general use, but for physical meteorologists it is extremely valuable.[12]

CLIMATOLOGY

General.—In climatology by far the most important accomplishment is the completion of publication of the third edition of Professor Julius Hann's *Handbuch der Klimatologie*, the universally recognized authority on all climatological subjects. In its new edition the work consists of three volumes. The first concerns general climatology; the second deals with the climates of the tropics; and the third covers the temperate and polar zones. Hann's *Handbuch* is the one indispensable book for all who are in any way concerned with the study of climates.[8]

Climatology of the United States.—The available frost data of the United States have been brought together and charted by P. C. Day, who has made a distinct step in advance over previous frost studies in that he has not limited himself to the data collected at the regular stations of the Weather Bureau (about 150 in number), but has used the observations made at about 1,000 coöperative stations scattered over the farming districts. Thus, the conditions resulting from local topography have been brought out, and the actual facts of frost occurrence are far more accurately presented

than heretofore.[6] In connection with frost, also, Prof. Henry J. Cox has made a thorough study of the conditions which lead to frost occurrence on the cranberry marshes of Wisconsin, and of the methods of protection against frost. This study is of wider application than in Wisconsin alone, for similar results undoubtedly obtain on the cranberry marshes of New Jersey and Massachusetts. The only complete set of cloud charts for the United States has been that published in 1891 by Gen. A. W. Greely, then Chief Signal Officer. During the past year Kenneth McR. Clark has prepared a new set of monthly and annual cloud charts, based on more recent data. These are now the standard cloud charts for the United States.[3]

Maryland Weather Service.—The Maryland Weather Service has set a standard of climatological work in the United States which does that state the highest credit. The first volume published (1899) contained reports on the physiography and meteorology of the state. The second (1907) contained a discussion of the climate and weather of Baltimore, by Dr. Oliver L. Fassig, so complete that it ranks with European climatological investigations. The third volume (1910) deals with the plant life of the state, following the other two in logical order, and affording a good example of a thorough investigation along the lines of economic climatology.[14]

Porto Rico.—The acquirement, by the United States, of the island of Porto Rico is bearing fruit in the excellent climatological studies which are being made there by Dr. Oliver L. Fassig, Director of the Weather Bureau at San Juan. Dr. Fassig has already published a general account of the climate of Porto Rico; a study of the normal temperature of Porto Rico, and a discussion of the trade winds.[7]

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7. Fassig, Oliver L.—"The Climate of Porto Rico." (U. S. Dept. of Agriculture, *Weather Bureau Bull.*, 4to., 1911, p. 12.)—Three charts of temperature, winds and rainfall, and one page of diagrams showing the monthly distribution of rainfall.

   —— "The Normal Temperature of Porto Rico, West Indies." (*Monthly Weather Rev.*, Vol. 39, Feb., 1911, pp. 299-302.)—With charts of mean annual, January and July temperatures, and mean daily maximum and minimum temperatures.

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10. Humphreys, W. J.—"On Passing Through the Tail of Halley's Comet." (*Ibid.*, pp. 239-244.)
11. —— "The Origin of the Permanent Ocean Highs." (*Ibid.*, Vol. 4, Pt. 1, 1911, pp. 1-12.)
12. Kimball, Herbert H.—"Solar Radi-

ation, Atmospheric Absorption and Sky Polarization." (*Ibid.*, Vol. 3, Pt. 2, 1910, pp. 69-126.)—Contains an excellent classified bibliography.
13. —— "Some Causes of Variation in the Polarization of Sky Light." (*Journ. Franklin Inst.*, Apr., 1911, pp. 333-344.)
14. Maryland Weather Service, Vol. 3, p. 533. (Baltimore, 1910.)—Of special interest to botanists, but based upon climate controls.
15. PALMER, Andrew H.—"Wind Velocity and Direction in the Free Air." (*Annals Astron. Obs. Harv. Coll.*, Vol. 68, Pt. 2, 1911, pp. 193-209.)—Data from 234 kite flights; from cloud observations made in 1890-91 and 1896-97; and from three years of *ballons-sondes* observations, are used in this work.
16. —— "Pressure Oscillations of Short Wave-Length." (*Ibid.*, pp. 210-229.)
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TERRESTRIAL MAGNETISM

R. L. FARIS

Land Surveys.—More field observational work in terrestrial magnetism has been carried out during the past year than in any previous year in the history of the subject. The chief activity in this line of practical as well as scientific work was in India, Canada, the United States, and the chief accomplishments, the splendid ocean magnetic work of the magnetic survey yacht *Carnegie;* and the land work performed under the auspices of the Carnegie Institution of Washington, in Peru, Brazil, Turkey, Arabia, Greece, Northern Africa and China. Arrangements were made for the early accomplishment of the general magnetic survey of the Australian continent and outlying islands, under the combined auspices of local and governmental organizations and the Carnegie Institution of Washington. Land magnetic surveys under the auspices of France, Germany, Great Britain, Italy, and Russia are also in progress.

Ocean Magnetic Work.—The magnetic survey yacht *Carnegie* has continued on the three-years' magnetic-survey cruise of the oceans mentioned in the last YEAR BOOK, having visited the following ports: Rio Janeiro, Buenos Aires, Cape Town, Colombo, Mauritius, Colombo, Batavia and Manila, cruising about 25,000 miles during the year. The work accomplished has been, as in the previous year, particularly of interest as developing further the large corrections on existing mariner's compass charts, especially over the much-traversed routes of the Indian Ocean. The maximum errors found in the two most extensively used "Compass Variation" charts were approximately 4° to 6°, although one of these charts was issued only a year ago. These are the largest errors so far detected, with the exception of a few found in the Pacific Ocean by the *Galilee.* The errors of the variation charts disclosed by the work in the South Atlantic during the year have not exceeded 1°. The errors found are in general systematic, that is, in the same direction over long distances, and in many cases due to the use of erroneously assumed secular changes in reducing previously observed values up to date. For example, in the Indian Ocean the variation charts would give secular changes of only about one-fourth of the amounts determined from the *Carnegie* observations and the previous work of the German Antarctic vessel the *Gauss,* so that the error of the reduction for the 10 years is almost 2°. Important errors, especially with reference to the theoretical investigation of the earth's magnetism, were also found in the dip of the magnetic needle and the magnetic force. In magnetic dip the errors of the magnetic charts, as shown by the year's work, have in some cases amounted to 4°, and in horizontal intensity to about one-twentieth part. Some of the results of previous analysis of the earth's magnetic field had indicated the possibility of large and more or less systematic errors in the magnetic charts, but it was not thought that they were of such magnitude as above

stated, which, it will be readily understood, are large enough to be of much practical importance to the navigator.

Secular Change of the Magnetic Declination in United States.—From a publication of the Coast and Geodetic Survey just issued, discussing the distribution of the magnetic declination in the United States for 1910, it is noted that westerly declination in the North Atlantic states is increasing much more rapidly than was supposed in 1905, and the annual change in declination is now about 6′ in the New England states, whereas in 1905 it was only about 3′, or in other words, the annual change in that region has about doubled in five years. On the Pacific Coast east magnetic declination is also increasing more rapidly than in 1905, and the region of maximum annual change is apparently some distance inland.

Magnetic Storms.—The origin and nature of those fluctuations of the earth's magnetic force, now spoken of as "magnetic storms," continue to be studied and discussed with great interest, especially with reference to their simultaneity of occurrence at different places over the world. Considerable coöperative special work among certain of the magnetic observatories of the world, including those in the United States, has been carried out in the endeavor to secure more observational data for the further elucidation of this question and other magnetic phenomena. Various preliminary investigations relating to the variations of the earth's magnetism have been published during the year, appearing chiefly in the *Journal of Terrestrial Magnetism*.

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Coast & Geodetic Survey.—*Results of Magnetic Observations, 1907-08, at Sitka (Alaska), Honolulu (Hawaii), Vieques (Porto Rico), and Baldwin (Kansas) 1907-09.* Discussion by D. L. Hazard. *Distribution of the Magnetic Declination in the United States for Jan. 1, 1910, with declination chart.* R. L. Faris. Washington Government Printing Office, 1911.

D'Orleans, Duc.—*Campagne Arctique 1907, Journal de Bord et Physique du Globe.* (Bruxelles, 1911.)—This publication gives the results of the magnetic work of the *Belgica* in Barents and Kara seas in 1907. Discussion by A. Nippoldt.

Fritsche, H.—*Die saecular Aenderungen den Erdmagnetischen Elemente.* (Riga, 1910.)

Leyst, Ernst.—*Die Variationen des Erdmagnetismus.* (Moscow, 1911.)—Discusses especially the relations of the variations of the magnetic elements with variation in sun-spot numbers.

—— *Ueber erdmagnetische Ablenkungsbeobachtungen.* Discusses reduction formulas for solid and hollow cylindrical magnets.

Maurer, H.—"Neue Weltkarte zur Darstellung der Isogonen." (*Petermann's Mitt.*, Aug., 1911.)—Shows construction of chart of the whole world, and isogonic lines of the world.

Moos, N. A. F.—*Magnetic Observations Made at the Government Observatory, Bombay, 1846 to 1905.* (Gov't Central Press, Bombay, 1911.)—The principal object of the volume, which is in two parts, as the author states, is to put the observations taken at Colaba throughout the period of sixty years in as concise and available form as possible. In part II a description of the phenomenon and a general discussion are given.

Schuster, A.—"Origin of Magnetic Storms." (*Proc. Roy. Soc.*, Vol. 85, No. A 575. London, 1911.)—A critical examination of the theory that magnetic storms are produced by streams of electrified corpuscles ejected from the sun.

Survey of India Reports.—*General Report on the Operations of the Survey of India During the Survey Year 1909-10.* (Calcutta, 1911.)—Gives progress of magnetic survey operations during the year in India.

GEOGRAPHY

PHYSICAL GEOGRAPHY

W. M. Davis

International Geographical Congress.—The chief geographical event expected in the year 1911—the International Geographical Congress, planned to be held at Rome in October—has been postponed till the spring of 1912.

U. S. Geological Survey Publications.—The leading source of information regarding new studies in physical geography in the United States is undoubtedly the publications of our national Geological Survey. Even the professional reports on problems of economic geology are usually prefaced by some account of the physical features of the region concerned, which in most cases is an advance on previous descriptions; for example, the chapter on "Geography" in Bulletin 449, *A Geological Reconnaissance in Southeastern Seward Peninsula and the Norton Bay-Nulato Region, Alaska;* or the paragraphs on "Topography" in Bulletin 452, *The Lander and Salt Creek Oil Fields, Wyoming.*

Topographic Maps.—In addition to the printed texts, the Survey publishes each year a considerable number of new sheets of the topographic map of the United States, usually on a scale of 1:125,000 or 1:62,500. This work, at present under the direction of R. B. Marshall, has shown a marked improvement during the past ten years. The newer maps bear every indication of conscientious care and highly cultivated skill on the part of the topographers in the field, and of exceptional expertness on the part of the lithographers in the office. They afford an unequalled supply of excellent material for study, serving alike as guides for those who visit the mapped districts, and as basis for investigation by those at a distance. Some of the most interesting sheets recently issued are: Red Rock Quadrangle, Washington; Hawthorne Quadrangle, Nevada; Abingdon Quadrangle, Virginia-Tennessee-North Carolina; and the Fryeburg Quadrangle, Maine-New Hampshire.

Maps of exceptional detail, on scales of two or three inches to a mile, have been prepared for certain districts in which important engineering problems are involved; as for example parts of the "Yazoo basin" in the lower Mississippi flood plain, or of the great central plain in the so-called "Valley" of California; and from these the geographer who cannot visit the ground may still obtain a minutely accurate understanding of its form, more accurate indeed than he could gain by anything short of detailed local study. Maps of certain interesting districts, such as the Yosemite Valley in California and the part of the Colorado Canyon in northern Arizona, ordinarily visited by travelers, have been made by F. E. Matthes, a topographer of exceptional skill, who is now engaged on a detailed survey of Mt. Rainier National Park.

Geologic Folios.—Mention must also be made of the Geologic Folios, which contain besides the topographic and geologic maps of their districts, a somewhat detailed text, at the beginning and end of which the physical geographer will find much information. Each folio opens with a general account of the physical features found within its area, and then, after setting forth the geological structure and history, closes with an account of the development of the surface forms. Some of the recent folios are: Belle Fourche, South Dakota; Greeneville, Tennessee-North Carolina; and Santa Cruz, California.

The folios are thus producing valuable descriptions of districts in various parts of the United States, but in two respects they leave something to be desired from the geographer's point of view. The introductory description at the beginning of each folio is intentionally presented in empirical form, and thus lags behind the present advance of rational physiography and behind the thoroughly rational treatment given to the geology in later pages. Further-

more, the closing account of the surface forms is presented, properly enough from a geologist's point of view, in terms of the history of their development, and therefore must be translated into terms of the visible landscape before it can fully serve the geographer's needs. To this form of presentation in a geological folio, a geographer can take no exception; but from the empirical presentation of the introductory sketch he may express his serious dissent.

State Survey Publications.—Several State Geological Surveys have undertaken the publication of Geographical Bulletins on selected districts, with special reference to the needs of teachers in local schools. Among the best are the Bulletins issued by the State Survey of Illinois; for example, Bulletin No. 12: *Physiography of the St. Louis Area*, by N. M. Fenneman; and Bulletin No. 15: *Geography of the Middle Illinois Valley*, by H. H. Barrows. (See XXVII, *State Geological Surveys.*)

Geographical Investigations.—Mention may be made of a few individual matters: Prof. W. W. Atwood, of the University of Chicago, is continuing his physiographic examination of the San Juan mountains in Colorado, for the U. S. Geological Survey. Profs. R. S. Tarr, of Cornell University, and L. Martin, of Wisconsin University, are still carrying on special studies of Alaskan glaciers in connection with the National Geographic Society. Prof. I. Bowman, of Yale University, has made a second visit to the Andean region of central South America, and Prof. E. Huntington of the same institution is extending his work in the arid regions of our southwestern states. Prof. J. W. Goldthwait, of Dartmouth College, is continuing his study of elevated shorelines along the shores of the Gulf of St. Lawrence.. Prof. D. W. Johnson, of Harvard University, has conducted, under the Shaler Memorial Fund, an investigation of supposed recent changes of level along the Atlantic coast of the United States, Canada, and northwestern Europe. In coöperation with Dr. F. Nussbaum, of Bern, the writer has organized and taken part in a "Geographical Pilgrimage from Ireland to Italy," in which a party of varying numbers, with a total of 25 members, visited, during August and September, various classic districts under the guidance of local experts, among whom may be named Professors Cole of Dublin, Marr of Cambridge, Vacher of Rennes, Demangeon of Lille, Glangeand of Clermont-Ferrand, Nussbaum of Bern, Richieri of Milan, and Mavinelli of Florence.

Society Activities.—The Association of American Geographers has announced its intention of publishing a yearly volume of "Annals"; the winter meeting of the Association will be held at Washington under the presidency of Prof. R. S. Tarr. The American Geographical Society of New York announces a "transcontinental excursion" for the early autumn of 1912, in celebration of the sixtieth anniversary of its foundation; invitations have been sent to the leading geographical societies of Europe, requesting the appointment of delegates who may be welcomed as guests of the American Society; some 20 delegates have thus far been named, including some of the most distinguished geographers of Europe. A similar number of American geographers will be invited to take part in the excursion, making a total membership of 50 or 60 persons.

OCEANOGRAPHY

G. W. Littlehales

International Coöperation. — The general advance in oceanography has been in the nature of the application of the philosophy of method. In every department of science, the annals of knowledge supply abundant evidence of the importance of method; and, for want of it, fruitless lifetimes have been spent in oceanography, not because their labor was slack, but because their plan of inquiry was sterile. The system according to which progress is to be sought in the future is the study in detail of definite stations in the ocean occupied in concert, and, as we hope, by international coöperation, and periodically revisited for the pur-

pose of observing, at certain depths, such physical conditions as the temperature, the salinity, the gas content, and the currents, and in this way aiming to discover the import of the variations of these observations upon the variations of physical and biological oceanography.

Ocean Temperatures.—Thus, when in the latter part of last year, Sir John Murray's expedition in the *Michael Sars* took serial temperatures and other physical observations at the same stations as those which were occupied in 1873 by the *Challenger* expedition, and found that the water in the mid-layers of the Atlantic was much warmer at the earlier time than at the later, fresh resources were at once created for the oceanographer, since the differences disclosed seem to indicate that there are such great fluctuations from year to year in the degree of warmth of the depths of the ocean that they even exceed the fluctuations in different seasons of the year. Fortunately, the mathematicians of oceanography had just provided the means for the calculation of the dynamic effect of these observed changes in producing movements in the different water layers.

Currents and Tides.—It fell to the lot of this expedition to assist us also in understanding more about the ocean currents, the tide-waves, and the distribution of living organisms and of deposits along the bottom of the ocean, by making measurements which show that there may be very considerable tidal currents in the open ocean down as deep as 800 m. And our tidal knowledge has further been extended by a discussion, in the United States Coast & Geodetic Survey, based upon the observations made by Peary's polar expedition, together with other observations of earlier dates, which provides a useful and instructive summary of the tidal movements of the Arctic Ocean, and, by predicting the existence of a large undiscovered area of land within the Arctic Circle, serves to reflect the great extent to which tidal phenomena, are now recognized to be dependent upon configuration.

Soundings.—Of the fundamental operations in oceanography, one of the most important is sounding the ocean for the purpose of ascertaining its depth and providing graphical representations of the relief of its bottom. Progress in this department of investigation has been made in all the oceans during the past year; but, as for our own country, it has been chiefly in the Pacific, where the steamer *Albatross* has made distant voyages and taken soundings in connection with the fishery and biological investigations which have been carried on in the Philippines and the neighboring waters of the Asiatic side, as well as in the waters of the American side of this ocean.

Deep-Sea Fishes.—We now have knowledge of nearly one thousand species of deep-sea fishes, but, regarding many of them, the extent of our knowledge is very limited. Respecting quite a number of them, we are acquainted merely with one, or at most, a few specimens, and are almost without information as to their biology, their propagation, development, history, growth, and external conditions of life. In the long and difficult journey which is yet to be performed in biological oceanography, we must first of all ascertain where the various forms of animals live, which, in the sea, will virtually consist in discovering the depth at which they flourish, since this alone can tell us the conditions of light, pressure, temperature, and salinity that are requisite for their existence.

Denitrification.—A discovery of great importance in oceanography has recently been made at the Tortugas Marine Laboratory of the Carnegie Institution of Washington by G. Harold Drew, of Christ's College, Cambridge, England. He finds that there is a very abundant bacillus in the tropical seas which denitrifies the water. This accounts for the scarcity of plant life in tropical seas, and for the deposition of calcium carbonate over wide areas, on account of the abstraction of the dissolved carbonic acid gas of the sea water by the alkaline base.

Paris Institute of Oceanography.—In the Spring of 1911, the Prince of Monaco inaugurated, in connection with the University of France, the Oceanographical Institute of Paris,

with the object of fostering public interest in oceanography and affording students of the University an opportunity of gaining an insight into its aims and objects. It is connected with the Oceanographical Museum at Monaco, and is international in its scope, because, while the administration is French, the scientific and technical matters are directed by a Comité de Perfectionnement whose members are oceanographers chosen from the whole world without distinction of nationality.

CARTOGRAPHY

CYRUS C. ADAMS

The more important map products in the year ending Sept., 1911, included over 1,000 titles, some of which embraced numerous sheets that, in many cases, had their own special name or subtitle. The latest maps relating to every part of the world are noted in the "New Maps" and annual index of the *Bulletin* of the American Geographical Society, the "Kartographischer Monatsbericht" in *Petermanns Mitteilungen*, the "Geographen-Kalender," and the map lists and index of the *Journal* of the Royal Geographical Society.

The World on a Millionth Scale.—Austria-Hungary, France, Germany, Great Britain, Italy, Russia, Spain and the United States are participating in the production of the map of the world on a scale of 1:1,000,000. Argentina, Brazil, Chile, Venezuela and, doubtless, other nations, will supply the sheets of their respective territories. The United States will supply 52 sheets for the atlas. In Sept., 1911, the work of preparing the base maps was far advanced or in progress in one-third of the country. It is likely that the one-millionth sheets of the United States will be completed and published within the next ten years. It is expected that only those parts of the oceans near the land, or occupied by islands, will be included in the map; and that the whole atlas will not embrace over 1,500 sheets. The map will be many times larger than any other map of the world yet made.

New Maps and Atlases.—The following list includes only specimen map products that are more generally interesting and useful. The various departments of the U. S. government and some of the state surveys have made additions, in customary volume, to the mapping of the United States and its dependencies. (See XXVII, *State Geological Surveys*, and *Physical Geography*.)

NORTH AMERICA

Alaska.—Map of Alaska. 4 sheets. By the Alaska Road Commission. 1:1.25 mill. Insets of Aleutian and Pribilof Islands. Washington, War Department. [Information compiled from all official surveys. Value emphasized by large scale.]

Canada.—(*a*) Cereal map of Manitoba, Saskatchewan and Alberta, showing acreage under crop (1909), in each township, in wheat, oats, barley and flax. 3 sheets. 1 in. equals 25 miles. Ottawa, 1910. Dept. of Interior. [It is intended to issue new editions each year.] (*b*) Map of Western Canada. 1:2.2 mill. 4 sheets. Ottawa, 1910. Dept. of the Interior.

Mexico.—Map of Mexico prepared by J. G. Bartholomew. 1:5 mill. Washington, 1911. *Nat. Geog. Mag.*, Vol. 22, No. 5.

United States.—1:2.5 mill. Revised edition. 3 sheets. Washington, U. S. Geol. Surv., 1910. [No relief of the land is shown; otherwise, the best general map of the country.]

Yosemite National Park, Administrative map of. 1:125,000. Edition of April, 1910. Washington, U. S. Geol. Surv.

SOUTH AMERICA

Argentine.—Nuevo mapa de la República Argentina, Chile, Uruguay y Paraguay. 1:4 mill. Buenos Aires, 1910. Oficina Cartogr. de Pablo Ludwig. [A good map.]

Brazil.—(*a*) Mappa do Estado do Rio Grande do Sul. 1:500,000. 4 sect. Berlin, Dietrich Reimer (for the state government), 1911. [Much new material used.] (*b*) Carta geral do Estado do São Paulo. Com indicacões sobre a agricultura, commercio, instruccão publica, industria e colonisacão, 1:2 mill. São Paulo, Commissão Geogr. e. Geol. do Estado de São Paulo. 1910.

Peru.—Das Quellgebeit des Amazonas-Marañon. 1:1 mill. Wilhelm Sievers. *Zeitsch. Ges. Erdk.*, No. 8, Taf. 7, Berlin, 1910.

AFRICA

Belgian Congo.—(*a*) Carte du Congo Belge. 1:8 mill. Brussels, 1911.

Mouve. Géog., No. 14. [Shows transportation routes.] (*b*) Die neue Grenze Belgische Kongo und Deutsch-Ostafrika nach dem Vertrag vom 11. August, 1910. 1:750,000. Gotha, *Pet. Mitt.*, Taf. 46, 1911.

Egypt.—(*a*) Geological map of. 1:2 mill. Cairo, Surv. Dept., 1910. (*b*) Egypte et Soudan Egyptien, 1:5 mill. Pl. 67 from the Atlas Universel de Géographie par Viv. de Saint-Martin et Fr. Schrader. Paris, Hachette & Cie., 1911.

German East Africa.—Karte von Deutsch-Ostafrika in 29 Blatt und 6 Ansatzstücken im Masstab von 1:300,000. Von P. Sprigade, and M. Moisel. C. 6 Tanga. Berlin, 1911. D. Reimer.

Ivory Coast.—Carte de la Côte d'Ivoire. A. Meunier. 1:3 mill. Supp. to *Guide du Commerce et de la Colonisation de la Côte d'Ivoire.* Paris, 1911. Office col.

Kamerun.—Karte von Kamerun, bearb. von Max Moisel. 1:300,000. Berlin, Dietrich Reimer, 1911. [2 sheets of the 20-sheet map of the colony now in preparation.]

Liberia.—General map of the Republic of. 1:2 mill. London, 1910. British Gov. Pub. No. 4449.

Morocco.—Atlas Universel de Géog., No. 62. Maroc. 1:2.5 mill. Paris, Hachette & Cie., 1910.

Transvaal.—Map of the. About 1:2 mill. Pretoria, Gov. Printing & Stationery Office, 1910.

ASIA

Asia Minor.—(*a*) Geologische Karte des westlichen Kleinasien. Von A. Philippson. Blatt 1. 1:300,000. Gotha Perthes. *Pet. Mitt.*, Erg-Heft 167, 1910. (*b*) Topographisch Karte des westlichen Kleinasien. Von A. Philippson. 6 sheets in 3 parts. 1:300,000. Gotha, Perthes, 1910.

Indo-China.—1:200,000. Sheets, 1-12. Hanoi, Service Geogr., 1910.

China.—(*a*) Postal map of (1909). Supp. to "Report on the Working of the Imperial P. O., 1909." Shanghai, Statist. Dept., Inspectorate Gen. of Customs, 1910. [The nations are basing their transliteration of Chinese names for the one-millionth map on these postal maps.] (*b*) Map of China, showing railroads, telegraphs and treaty ports. 1:5 mill. London, 1910. War Office, Gen. Staff, No. 2361.

Palestine. — Niederschlagskarte von 1:2,100,000. Z. D. Paläst. Ver., Vol. V., Nos. 2 & 3, Pl. 5, 1910.

AUSTRALIA

Australia.—(*a*) Reduced survey map of. 1:6 mill. Edinburgh, Bartholomew, 1910. (*b*) Map showing the principal railway systems of. About 1:12 mill. Sydney, Rep. Chief Commissioners, 1910.

New South Wales.—Average rainfall map and isohyets of. 1:2 mill. Melbourne, Cent. Weather Bur., 1910.

EUROPE

Alps.—(*a*) Géologie appliquée et cartographic industrielle des Alpes-Maritimes. Par C. H. J. Pellegrin. 18 maps. Paris, Béranger, 1910. (*b*) Hölzels Wandkarte der Alpen auf Grundlage der V. von Haardtschen Karte. 1:600,000. Vienna, Ed. Hölzel, 1909. [One of the best maps of the whole Alpine region.] (*c*) Present and Past Glaciations of the Alps. 1:5 mill. *Z. Gletsch.* Vol. 4, No. 4, Pl. 4, 1910.

Europe.—(*a*) G. Freytag's Hand- und Reisekarte von Europa. 1:75 mill. Vienna, Freytag & Berndt, 1910. (*b*) Touristen Wanderkarte. 1:100,000. *Ibid.*, Vienna. G. Freytag & Berndt, 1910. (*c*) Touristen Wanderkarte der Dolomiten (2 sheets). 1:100,000. *Ibid.* (*d*) G. Freytag's Automobil-Routenkarte von Mittel-Europa. 1:2 mill. Inset of Vienna. *Ibid.*

France.—Carte aéronautique au 1:200,000 en Couleurs. Sheet Châlons. Paris, Serv. Géogr. de l'Armée, 1911. [Example of good airship maps.]

Germany.—Glacial map of north, and the Netherlands. 1:5 mill. *Z. Gletscherk.*, Vol. 4, No. 4, Pl. 3, 1910.

Italy. — Carte d'Italia. 1:200,000. Florence, Instituto Geografico Militare, 1910. [5 sheets of this excellent map, which is now in preparation.]

Scotland.—Density of Population of Scotland. 1911 census. 1:1.3 mill. Inset of Orkney and Shetland Is. Edinburgh, *Scott. Geogr. Mag.*, Vol. 27, 1911.

Switzerland. — Schweizerischen Eisenbahnen. 16 maps and 32 pp. text. Bern. Post & R. R. Dept., 1910.

WORLD

JOHNSTON, W. & A. K.—Bathy-orographical Map of the World on Gall's Projection. Equat. Scale, 1:33.6 mill. Edinburgh, W. & A. K. Johnston, 1911. [Heights in feet; depths in fathoms. Insets show mean annual temperatures and rainfall.]

Atlases

BARTHOLOMEW, J. G.—A School Economic Atlas, with Introduction by L. W. Lyde. 64 Maps. Oxford, Clarendon Press, 1910.

Denmark.—Danmark i 35 Kort med 3 Kort over Nordslesvig. Copenhagen, Politiken's Forlag, 1910. A handy pocket-atlas of Denmark and northern Schleswig.

HABENICHT, H.—Justus Perthes Taschenatlas. 48. Aufl. Mit geographisch-

statistischen Notizen von H. Wichmann. Gotha, J. Perthes, 1911.

NIOX, G., and FALLEX, M.—Atlas Classique, édition complète. 64 Pls. Paris, Ch. Delagrave, 1911. [An atlas for higher schools.]

SCHRADER, F.—L'Année cartographique. Supplément annuel a toutes les publications de Géog. et de Cartog. 3 maps. Paris, Hachette & Cie., 1911. [Noting the more important additions made to the maps in the year.]

Boundary Surveys and Agreements:—**Peru—Bolivia.**—The British government, at the request of Peru and Bolivia, assigned in 1911 British officers to carry out the demarcation of the boundary agreed upon between those two republics in 1910. The work, which is now in progress includes, besides the survey of the frontier region, the placing of boundary marks and the making of a map. It is expected to occupy three years.

Tunis—Tripoli.—The frontier between Tunis and Tripoli agreed upon in 1910 was later demarcated by parties representing France and Turkey. The boundary extends from Ras Ajedir on the Mediterranean to a point eight miles beyond Ghadames and has been marked throughout by pillars. Tunis secures a good caravan route to the south with only two belts of dunes to be crossed.

French West Africa—Liberia.—Under the agreement of 1908-1909 between France and Liberia the area of the African Republic was further reduced. A joint commission was delimitating the new boundary in the latter part of 1911.

Sierra Leone—Liberia.—A readjustment of the boundary between Sierra Leone and Liberia was agreed to in Jan., 1911. The Republic has ceded to Sierra Leone the territory of Kaure Lahun in exchange for an area south of the Morro River, which now becomes the boundary. A map of the new boundaries of Liberia in accordance with the French and British treaties appears in the *Geographical Journal*, Vol. 37, p. 449.

Dutch New Guinea—German New Guinea.—In Dec., 1910, the exploration of the boundary between Dutch and German New Guinea was completed. The work involved the ascent of the Kaiserin Augusta River and the exploration of an elevated plain beyond the water parting to another and still unnamed river, whose destination has not yet been determined.

EXPLORATION AND DISCOVERY

HENRY GANNETT

Antarctic.—Five expeditions were sent to the Antarctic during the past year, for the purpose of reaching the South Pole, or for the exploration of the Antarctic continent, or both. The first is the English expedition under command of Capt. R. F. Scott, who sailed from Port Chalmers, New Zealand, on his ship, the *Terra Nova*, November 29, 1910. A successful landing was made at a point near his former situation, in McMurdo Sound, as reported by the ship on her return. This expedition will use Siberian ponies for land transportation, and in the journey toward the Pole will probably follow the general route pursued by Shackleton.

A German expedition under Lieut. Wilhelm Filchner left early in the year, intending to make a landing somewhere on the coast of Weddell Sea, perhaps on Coats Land, on the opposite side of the Antarctic continent from Capt. Scott's headquarters. No reports have yet been received from him. Should a landing be effected, a rich harvest of geographical results may be expected, as this is a virgin field.

In the YEAR BOOK for 1910 there was noted the departure of an expedition under Capt. Amundsen, which proposed to go through the Strait of Magellan, up the Pacific Ocean, and thence through Bering Strait into the Arctic Ocean, for the purpose of making discoveries in that ocean. Great surprise was expressed, therefore, when it was learned that, instead of going to the Arctic, Amundsen had gone to the Antarctic and had made a landing at Whale Bay on the ice sheet covering Ross Sea. This point is near the east end of the ice front, not far from King Edward VII Land. A journey toward the South Pole from this point will probably develop knowledge regarding the east shore of Ross Sea.

A Japanese expedition started for the Antarctic, intending to make a landing upon King Edward VII Land. This expedition, however, before reaching its projected landing-place, suffered a series of mishaps, the chief of which was the loss of nearly all of the dogs upon which the expedition depended for transportation.

Near the close of the year 1911 (Dec. 2) still another expedition started for its field of exploration in the Antarctic. This is in charge of Dr. Douglas Mawson, geologist of the Shackleton expedition. For this expedition, the *Aurora* will be used, a barkentine of 580 tons gross, with auxiliary steam power. The region which it is designed to explore lies between Cape Adare and Emperor William II Land, to the northwest of the field of Capt. Scott.

Alaska.—For several years Ernest Leffingwell has been engaged in exploration of the Arctic coast of Alaska, and the land between the coast and the divide to the south. Advices recently received indicate that his work is going on very successfully.

Canada. — An expedition under Messrs. V. Stefánsson and R. M. Anderson, under the auspices of the American Museum of Natural History, started from New York in May, 1908, for the purpose of studying the Eskimo and making a zoological survey along and near the north coast of Canada, especially east of the McKenzie River at Coronation Gulf, Coppermine River and Victoria Land. The expedition encountered many difficulties and delays in its earlier stages, but the latest advices down to Jan., 1911, show that it has been very successful. The region north and east of Great Bear Lake, to the Arctic Ocean and the Coppermine River has been explored and mapped. One of their most interesting finds is a group of "white" Eskimo in the southern part of Victoria Land. (See XXIX, *Anthropology.*)

During the years 1908 and 1909 Frank J. P. Crean was engaged under the Department of the Interior of Canada in explorations of the unknown parts of the provinces of Saskatchewan and Alberta. His report, with a map of the territory between latitudes 54° and 57° and longitudes 104° to 115°, has been published during the year.

Panama Canal Zone.—In the Spring, an expedition under the auspices of the Smithsonian Institution was sent to the Panama Canal zone for the purpose of studying the fauna and flora of that region before their destruction by the opening of the Canal. This expedition was highly successful.

South America.—Major P. H. Fawcett, of the British Army, who has been engaged in the service of Bolivia in surveying and marking the boundary line between that country and Peru, completed his labors about the close of the year 1910. This survey involved the exploration of an extensive territory heretofore almost unknown.

Dr. Wilhelm Herzog, a German botanist, is carrying on explorations in the Andes of Bolivia. Much of his work has consisted in tracing the eastern rim of the Cordilleras from a point near Oran, Argentina, northward, together with a broad strip of country on either side.

An expedition under Prof. Isaiah Bowman, and under the auspices of Yale University, is engaged in a geographic and geologic exploration of parts of the Peruvian Andes, including a broad section from the Amazon Basin across the Andes to the Pacific.

Dr. Wilhelm Sievers has made public an account of his explorations among the Cordilleras of Ecuador and Peru. Among other important discoveries, he has traced a new source for the Amazon.

For a number of years the government of Dutch Guiana has been engaged in exploring its territory; and recently, by the completion of extended journeys through the region, material has been supplied for the preparation of a fairly good map of its area.

Spitzbergen.—The survey of Spitzbergen by Norwegians, which has been prosecuted since 1906, has been continued with success.

Africa.—A survey is being made of the boundary between Rhodesia

and the Belgian Congo, including the frontier region between Lakes Tanganyika and Mweru, and between Lake Bangweolo and the Congo-Zambesi watershed, and also along that watershed as far west as the meridian of 24° West of Greenwich.

Lieutenant Boyd Alexander, after carrying on a very successful expedition, in which he had explored the Kameruns, the Mananguba Range, had traveled through an almost unknown country, into southern Nigeria, and by way of Yola to Maifoni, and thence to Wadai, was at this point unfortunately killed by natives. His body and the records of his expedition have recently been recovered.

Prof. Hans Meyer, of Leipzig, is exploring the Virunga volcanic region in German East Africa.

A survey is now in progress of the boundary line between Liberia and French Guinea, under a joint commission of the two countries.

Capt. Periquet has completed surveys in French Equatorial Africa for a railway from the coast to the interior. Some 3,000 miles of route surveys were made.

New Guinea.—Our knowledge of the interior of the Island of New Guinea is increasing rapidly, several expeditions having been at work there during the past year. An English expedition under Staniforth Smith has traversed a great extent of country and mapped several unknown rivers and mountain ranges. Another expedition, under H. A. Lorentz, was successful in penetrating to the interior, climbing several high mountains, and in mapping much unknown country.

A joint expedition for the exploration of the boundary line between the Dutch and German possessions in New Guinea has reported the completion of its work, which has involved the exploration and mapping of a large part of the interior of the island.

A British expedition in charge of Captain Rawling is engaged in exploration of the interior of Dutch New Guinea.

Among the numerous Dutch expeditions for the exploration of New Guinea, perhaps the most interesting is that under Captain Schaeffer, which reached an altitude on a mountain summit 10,800 feet high, and established a camp there. From this point a great extent of country was visible.

XXVIII. CHEMISTRY AND PHYSICS

CHEMISTRY

INORGANIC AND PHYSICAL CHEMISTRY

ARTHUR WESLEY BROWNE

Water.—In connection with a general discussion recently held by the Faraday Society upon the subject of the constitution of water, there has been published a series of five articles, by P. Walden, P. A. Guye, W. R. Bousfield and T. M. Lowry, W. Sutherland, and W. Nernst, respectively. The various lines of evidence considered seem to corroborate the theory, held for years by certain physicists and chemists, that the constitution of water must be expressed by the formula $(H_2O)_x$, and seem moreover to point toward the presence in liquid water and in aqueous solutions of single, double, and triple molecules, or "steam," "water," and "ice" molecules, with the formulae H_2O, $(H_2O)_2$, and $(H_2O)_3$, in proportions depending upon the temperature, the nature of the dissolved substance, and the concentration of the solution. This idea receives additional confirmation from the work of A. Rosenstiehl, who has made a statistical study of 179 salts containing water of crystallization.

The behavior of water vapor toward a mixture of carbon or of a carbonaceous material with lime at a temperature of from 600° to 800° C. has been investigated by L. Vignon. Decomposition of the water was effected more rapidly and at a lower temperature by the mixtures used than by carbon alone, and resulted in the formation of hydrogen, methane, ethylene, carbon monoxide, and calcium carbonate. It is suggested that the formation of natural gas and petroleum may be attributable to similar processes in nature. In this connection it may be of interest to cite the experiments of A. Gautier and P. Clausmann, who obtained methane and hydrogen by the action of steam upon the product obtained when magnetic iron oxide was heated in an atmosphere of carbon monoxide and hydrogen. Ferric oxide, under somewhat similar treatment, yielded a product resembling vaseline and the simpler solid hydrocarbons. Another possible theory for the formation of natural gas and petroleum might therefore be based upon the action of carbon monoxide beneath the surface of the earth upon reducible metallic oxides, with formation of carbides, which would subsequently react with steam-forming gaseous, liquid, or solid hydrocarbons.

Electromerism.—In the course of an investigation upon the ionization of gases—a process for which the new name *electromerism* has been suggested—and chemical change, H. B. Baker has found that the rate of reaction between certain gases is greatly accelerated by the presence of *electromers*, which seem to facilitate condensation of the small amounts of water vapor present in the gas mixture. The catalytic action of minute amounts of water upon numerous reactions may probably be explained, in accordance with the theory of J. J. Thomson, on the ground that the water tends to condense upon the electromers, some of which are always present in ordinary gases, and that the reactions begin in the resulting drops.

Hydrogen Peroxide and Ozone.—By passing a brush discharge, obtained with the aid of a large Wimshurst machine, between a platinum

point and a platinum disk, and through air saturated with water vapor, M. Kernbaum has succeeded in effecting partial decomposition of the water, with formation of hydrogen peroxide and hydrogen. He ascribes the action to the influence of cathode radiation, rather than to that of the ultra-violet light produced by the discharge. A. Tian has shown that when water is exposed to the action of ultra-violet light, hydrogen is first evolved, and later both hydrogen and oxygen, when the hydrogen peroxide begins to decompose (see E. van Aubel, YEAR BOOK, 1910, p. 589). K. Charitschkow states that hydrogen peroxide is formed when detonating gas is burned, and when oxygen gas (but not when air) in contact with water is exposed to sunlight. Hydrogen peroxide is likewise formed in small amounts upon the surface of moist, porous substances such as wood, asbestos, and pumice. The formation of oxygen, hydrogen, hydrogen peroxide, nitric acid, and ammonia was found by A. Makowetzky to take place at the anode when a glow discharge was passed between a Nernst filament used as the anode, and a surface of water, while hydrogen alone was liberated at the platinum cathode. W. Chlopin has found that ordinary, undried air, on treatment with ultra-violet rays for a few minutes, yields very appreciable amounts of both hydrogen peroxide and ozone, and very small amounts of nitrogen oxides. An interesting contribution to the theory of thunderbolts has been made by W. M. Thornton, who concludes, on the basis of several lines of evidence, that the principal, although perhaps not the only, constituent of ball or globular lightning is an aggregation of ozone and partially dissociated oxygen expelled from a negatively charged cloud by electric waves after a violent lightning discharge. By bringing together dry ethereal solutions of zinc ethyl and hydrogen peroxide E. Ebler and R. L. Krause have prepared zinc peroxide, a white amorphous solid, which is considered to be a true salt of hydrogen peroxide.

Photochemistry and Actinochemistry.—In a recent address P. C. Freer has summarized the researches that have been conducted in Manila with a view to ascertaining the quality of tropical sunlight and its influence upon certain chemical reactions. From this work he draws the conclusion that "tropical sunlight produces chemical changes which either take place much more slowly in temperate climates, or indeed do not take place at all." R. F. Bacon has found that tropical sunlight seems to ionize the air to a greater extent than is usual in the temperate zones. This phenomenon may, however, be due to the large amount of moisture in the tropical atmosphere, and to the luxuriant vegetation of the tropical islands. Hydrogen peroxide is rapidly formed when either water or a salt solution is exposed to direct sunlight in Manila. On the basis of this fact it is suggested that the production of hydrogen peroxide may be an essential intermediate step in the formation of clouds by the action of weak ultra-violet light. D. Berthelot and H. Gaudechon have subjected aqueous solutions of ammonia and of ammonium salts in the presence of air or oxygen to the action of ultra-violet rays with the result that nitrites are formed. Nitrates under similar treatment are reduced to nitrites. Many points of similarity between the behavior of ultra-violet rays and that of certain micro-organisms were noted. These investigators have also effected several other syntheses by exposing the substances to prolonged treatment at ordinary temperatures with strong ultra-violet light. It was found possible (1) either to prepare carbon dioxide from carbon monoxide and oxygen, or to decompose it with formation of these substances; (2) either to form water from its elements, or to decompose it into its elements; (3) either to obtain formaldehyde from carbon monoxide and hydrogen, or to carry out the reverse process; (4) to prepare formamide from carbon monoxide and ammonia. The conclusion is drawn that "the synthesis of hydrates of carbon is a physico-chemical action caused by light, and can be realized in the absence of plants or chlorophyll."

Nitrogen.—The compounds of nitrogen have long been considered to bear a certain relationship to the corresponding compounds of oxygen (see YEAR BOOK, 1910, p. 590-1). The gases themselves, however, although similar in some respects, differ markedly in their chemical activity under ordinary conditions, oxygen being active and nitrogen inert. By subjecting pure nitrogen, from whatever source, to the glow discharge, R. J. Strutt has, however, succeeded in obtaining an active modification of this element. The gas after treatment glows for a short time, a fact which is considered to be due to recombination of dissociated atoms. The active nitrogen was found to convert ordinary phosphorus into the red modification, to combine with sodium, and to form with gently heated mercury an explosive compound. It acts upon nitric oxide with formation of nitrogen tetroxide, attacks acetylene, and liberates halogen from certain organic compounds, combining with carbon to form cyanogen. This piece of work is undoubtedly to be regarded as one of the most interesting scientific advances of the year within the field of inorganic and physical chemistry. The attempt made by F. Raschig to prepare the hypothetical polymer $(N_3)_2$ by means of the reaction of hydro-nitric acid with iodine, or with chlorazide, N_3Cl, was unsuccesful.

Mercury.—The pressures at which cylinders of hardened steel filled with mercury will burst were found by P. W. Bridgman (see YEAR BOOK, 1910, p. 604) to be of about one-fourth the magnitude of the bursting pressures for cylinders filled with water. This was explained by the fact that under the conditions of the experiments in which mercury was used the iron undergoes amalgamation. This process, however, does not occur as a direct result of pressure alone, but as the result of an initial strain which effects a distension of the pores of the iron, thereby facilitating union with the mercury. A very interesting property of mercury vapor has been discovered and investigated by W. von Bolton. A glass test-tube containing barium amalgam and closed with a rubber stopper was kept for about three weeks at room temperature. At the close of this time a ring of black material, subsequently shown to be carbon, was found near the exposed end of the stopper. This carbonization was found to be due to the action of mercury vapor, in the presence of moisture, upon a gas evolved from the vulcanized rubber. The process, which takes place more rapidly at 100°, is accelerated by the presence of sulphur, but retarded by selenium and tellurium. Amalgams, especially sodium amalgam, yield the vapor more efficiently than does liquid mercury itself. Illuminating gas, chloroform, carbon tetrachloride, carbon bisulphide, carbon dioxide, silver bromide (in a gelatin photographic plate), and hydrogen sulphide—the last-named with liberation of sulphur—are also decomposed by the action of mercury vapor. In the black deposit of carbon are found microscopic colorless crystals which show certain of the characteristic properties of the diamond. It would appear, then, that certain carbon compounds may be decomposed by mercury vapor with formation of diamonds. From this fact the conclusion is drawn that the formation of graphite and of the diamond in nature may perhaps be attributable to the action upon carbon dioxide of metallic vapors, such as the vapor of iron or of magnesium. By electrolyzing a saturated solution of tetramethyl ammonium chloride in absolute alcohol at —10° between a silver-plated platinum anode and a mercury cathode, H. N. McCoy and W. C. Moore have obtained tetramethyl ammonium amalgam, a crystalline solid which is fairly stable at low temperatures, and have made an extended study of its properties. The amalgam is violently decomposed by water with formation of hydrogen, colloidal mercury, and tetramethyl ammonium hydroxide. It acts upon aqueous solutions of ammonium, sodium, potassium, and copper salts, and upon alcoholic solutions of copper and zinc salts, the tetramethyl ammonium group replacing these metals in the salts and setting free the metals themselves or forming the corresponding amalgams. The au-

thors consider that they are warranted in concluding "that the organic radicals in our amalgams are in the metallic state and, therefore, that it is possible to prepare composite metallic substances from non-metallic constituent elements."

Solutions.— From non-aqueous, non-conducting solutions it was found possible by C. B. Gates to throw out metallic copper by means of lead, zinc, cadmium, tin, bismuth, antimony, mercury, silver, iron, nickel, cobalt, aluminum, magnesium, sodium, potassium, and calcium, but not by means of platinum or gold. Copper may also be precipitated from fused organic salts by many of the common metals. A series of the metals arranged in accordance with their relative basicity in non-aqueous solutions does not coincide with the electrochemical series. The interesting discovery was made that many metals are appreciably dissolved by oleic acid with concomitant evolution of hydrogen.

Tellurium.—The work of Flint, (see YEAR BOOK, 1910, p. 591), who claims to have proved the complexity of ordinarily pure tellurium, has been seriously called in question by Harcourt and Baker. These investigators have duplicated Flint's experiments with the result that the mean value for the atomic weight of tellurium was found to be 127.54. The lower results obtained by Flint are thought to be attributable to the formation of a higher nitrate. Stock and Blumenthal have prepared carbon bitelluride, an analogue of carbon bisulphide, by passing an electric arc or spark between graphite and tellurium electrodes under carbon bisulphide. This substance is a very unstable brown solid which dissolves in carbon bisulphide with formation of a yellow solution. From concentrated solutions at —100° glistening brown crystals may be deposited. Carbon bitelluride possesses an unbearable odor, and is extremely irritating to the mucous membrane.

Celtium.—By repeated fractionation of the nitrates in connection with the isolation of lutecium (see YEAR BOOK, 1910, p. 591) from the gadolinite earths, G. Urbain obtained a mother liquor that could not be made to crystallize. From this he obtained a white oxide of magnetic susceptibility very much lower than that of lutecia. In chemical character the new element, which shows a large number of characteristic lines in the arc spectrum, is intermediate between the elements lutecium and scandium with which it is associated. The name *celtium* is suggested by the discoverer.

Radioactive Elements.—E. Ebler has succeeded in preparing a small sample of metallic radium (see YEAR BOOK, 1910, p. 592) by carefully decomposing *in vacuo* perfectly dry crystals of radium trinitride, $Ra(N_3)_2$. Although the resulting product was contaminated with metallic barium, the work will probably stand as an interesting confirmation of Mme. Curie's discovery that pure radium is a metallic element, with properties analogous with those of metallic barium. The electrochemistry of polonium and other radioactive elements has been investigated by A. R. Johnson. In order to separate polonium from bismuth the oxychloride was dissolved in hydrochloric acid. By rotating a copper disc in the resulting solution, deposition of the radioactive element was effected. Polonium seems to be a metal that is less electropositive than copper or bismuth, but more than mercury. By passing a slight current between copper electrodes through a solution containing polonium it was found possible to effect the deposition upon the cathode of nearly all of the polonium present. The element therefore moves with the current in solution, as do real metals. The chemistry of mesothorium, the first product of the thorium disintegration series, and the parent of radiothorium, has been independently investigated during the past year by W. Marckwald and by F. Soddy. The latter investigator inclines toward the opinion that thorium-X, mesothorium, and radium form a trio inseparable by chemical means. He also propounds the question "whether some of the common elements may not, in reality, be mixtures of chemically non-separable elements in constant proportions, differing step-wise by whole units in atomic weight." This would certainly

account for the lack of regular relationships between the numerical values of the atomic weights." De Forcrand has attempted to predict some probable chemical properties of radium and its compounds, basing his statements upon certain relationships that exist between radium and the metals of the alkali and the alkaline earth groups. (See also *infra, Physics.*)

Miscellaneous.—Brief mention at least should be accorded to the work of A. C. Vournasos, who has described a method for the synthesis of volatile hydrides. This consists in heating the element in question with sodium formate. E. Bentel has studied the behavior of certain gold compounds toward potassium ferrocyanide solution and finds that finely divided metallic gold slowly dissolves under certain conditions in this reagent. J. Novak has prepared two magnesium carbides, MgC_2 and Mg_2C_3. He states that these substances furnish the only example of two simple and well defined carbides formed from the same metal. J. Meunier has found that by holding a piece of copper in the reducing flame of a gas burner and then thrusting it into the interior of the burner, the metal continues to glow, thus furnishing an illustration of the rapid combustion of gases without flame. Wolfgang Ostwald has confirmed the experimental data of Kossonogov, who recently investigated with the ultramicroscope the phenomena of electrolysis, but offers a new explanation of the facts. The luminous points supposed by Kossonogov to be ions are regarded by Ostwald as charged colloidal particles. W. v. Lepkowski has investigated critical mixtures of aniline and amylene with the aid of the ultramicroscope and with especial reference to the interesting opalescence phenomena characteristic of liquids in the neighborhood of the critical state.

ORGANIC CHEMISTRY

J. M. Nelson

Structural Formulae.—The main object in the use of structural formulæ, especially in organic chemistry, has been to give a very short but complete expression for the chemical nature of compounds. In this way it is possible to point out the difference between isomeric substances, and also to understand their having different chemical properties. At first atomic weights and valence were considered as sufficient for this purpose, but as the number of organic compounds studied carefully by the chemist increased, need for some new means became apparent. For this reason Van't Hoff introduced the idea of stereochemistry or spacial arrangement of the atoms and groups within the molecule. Then tautomerism was added to the list to account for differences which could be explained in no other way. Even with all this, many isomeric substances, like the two benzophenones or the three different cinnamic acids, could not be distinguished from each other by means of their structural formulae. Falk and Nelson (*Journal of the American Chemical Society*, vol. 32, 1911, p. 1,637) have now suggested another addition, that of giving valence direction. By means of this it is possible to write structural formulae for compounds like those mentioned above in such a way that their differences are expressed in their formulae.

Falk (*Journal of the American Chemical Society*, vol. 33, 1911, p. 1,140) has applied this idea to explaining the difference between ethylenic isomers like maleic and fumaric acids, in place of the older way of stating that they differ in a stereochemical sense. He considers the difference between the acids as due to the difference in direction of certain valencies. This might be more clearly shown by means of the following formula:

$$HO_2C.CH \begin{matrix} \rightarrow \\ \leftarrow \end{matrix} CH.CO_2H$$

Fumaric Acid

$$HO_2C.CH \begin{matrix} \rightarrow \\ \rightarrow \end{matrix} CH.CO_2H$$

Maleic Acid

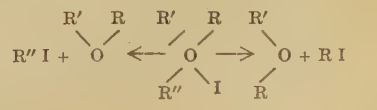
Cinnamic Acids.—In his investigation of the three cinnamic acids Stobbe (*Berichte der Deutschen chemischen Gesellschaft*, vol. 44, 1911, p. 2,753) has come to the conclusion that all three acids belong

to the *cis* variety and that there are two chemically different isomeric acids, the mono-morphic *allo* cinnamic acid (melting point 68°) and the two dimorphic forms of *Iso*-cinnamic acid (melting point 58° and 42°).

Acetoacetic Ester.—Probably no other organic compound has elicited more interesting and difficult research than acetoacetic ester. This substance, discovered by Geuther in 1863, was found to be tautomeric, that is, capable of existing as two distinctly different compounds. It behaved both as an alcohol and a ketone when subjected to various chemical reactions. Since then many other substances have been noticed which possess this form of isomerism, and it has been explained as due to the shifting of position of a labile hydrogen atom within the molecule. Until within the last year no one has ever succeeded in isolating the two forms of acetoacetic ester, which always exist together as a mixture. Prof. Knorr and some of his students (*Berichte der Deutschen chemischen Gesellschaft*, vol. 44, 1911, p. 1,138) have now been able to carry out this separation, obtaining the two components in pure condition. By working with low-temperature conditions (—78° C.), they found the ketone separated as a crystalline solid product, while the alcohol remained as an oil that solidified only at the temperature of liquid air. From this work it was found that ordinary acetoacetic ester is a mixture, about 2 per cent. enolic (alcohol) and 98 per cent. ketonic. They also found that the transition of the ketonic into the enolic form is comparatively slow, so that the former can be conveniently handled in the laboratory.

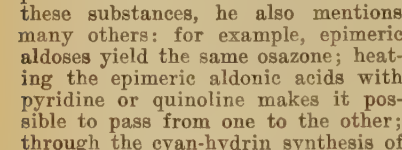
Walden's Inversion.—One of the most interesting reactions to the organic chemist is Walden's inversion. By means of this reaction many substances which have the property of rotating the plane of polarized light either right or left, can be changed into their optical antipodes. This is accomplished by replacing certain atoms or groups within the molecule by some other group, and then in turn again replacing this foreign atom or group by the original. The compound after having undergone this treatment very often shows the opposite rotation to that which it possessed originally. In order to account for this change in property of a substance, Emil Fischer (*Annalen der Chemie*, vol. 381, 1911, p. 123) has carried out a series of experiments with this reaction. The conclusions that he has arrived at are: Walden's inversion is a substitution reaction in which the entering group may or may not enter the same spacial position on the carbon atom as the group replaced. The question as to whether inversion will or will not take place depends on the nature of the reagent used and on that of the other groups which are linked to the asymmetric carbon atom. As far as the energy is concerned, optical antipodes possess the same energy content, and so have no influence on the direction of the change. The inversion may be complete, partial or absent.

Grignard Reagent.—Tschelinzeff suggested that ether behaves as a catalytic agent in the formation of the Grignard reagent; the alkyl halide first forming an oxonium compound with the ether and this in turn being decomposed by the magnesium forming the above reagent. Based on this suggestion many attempts have been made to confirm this experimentally. So far, no direct proof has been obtained, but Stadnikoff (*Berichte der Deutschen chemischen Gesellschaft*, vol. 44, 1911, p. 1,157) has recently supplied us with strong evidence that the above assumption is correct. He selected an ether in which the two alkyl groups were different and also differing from that of the alkyl halide. The oxonium salt formed from triphenyl methyl ethyl ether and *n*-propyl iodide was found to dissociate in two ways, yielding two different Grignard reagents, viz., *n*-propyl magnesium iodide and triphenyl methyl magnesium iodide. This might be more clearly explained by the following formula:



Sugar Nomenclature.—Many monosaccharides bear very simple relations to each other; thus, glucose and mannose differ only in the spacial configuration of the carbon atom next to the carbonyl group. For this reason Votocek (*Berichte der Deutschen chemischen Gesellschaft*, vol. 44, 1911, p. 360) has suggested a new system of nomenclature for the sugars which cuts in half the number of names of these substances. He suggests that the prefix "*epi*" be used to indicate this sort of relationship, which has given the name epimerism. Following this plan, mannose would be named epiglucose, ribose would be epiarabinose, etc. He has also extended this system of nomenclature to substances closely related to the sugars, like ribonic acid, which would then be epiarabonic acid, while talit would have the name epigalaktit. Besides the advantages already pointed out in the nomenclature of these substances, he also mentions many others: for example, epimeric aldoses yield the same osazone; heating the epimeric aldonic acids with pyridine or quinoline makes it possible to pass from one to the other; through the cyan-hydrin synthesis of any aldose, the two epimeric aldoses are obtained. Thus xylose will form gulose and epigulose.

Anderson (*Journal of the American Chemical Society*, vol. 33, 1911, p. 1,510) has noticed that the configuration of the carbon atoms α and β to the carbonyl group seems to determine the direction and degree of optical rotation of the sugars. It is possible, in fact, to decide from a glance at the configuration of these carbon atoms, approximately what the rotation of a sugar will be. The four possible spacial arrangements of the α and β carbon atoms and their corresponding rotations are:



Synthetic Rubber.—It has been observed that compounds containing the butadiene complex C=C—C=C all have a tendency to polymerize into rubber-like products. This takes place when these substances are allowed to stand for a long time, or more rapidly when heated under pressure with acids like acetic. Prof. Harries (*Annalen der Chemie*, vol. 383, 1911, p. 157) now has found that these butadienes undergo polymerization in much the same way when treated with metallic sodium. The caoutchoucs obtained in this manner are not exactly identical with natural rubber or those obtained by the first mentioned methods of polymerization, from a chemical standpoint. They are, however, to all outward appearances the same. The synthetic rubbers by the acid method of polymerization are called normal caoutchoucs, while those obtained by means of sodium are named sodium caoutchoucs. Besides this, Harries has also made a careful study of these synthetic products, showing that they behave normally toward vulcanization and form the corresponding bromides, nitrosites and ozonides. (See XXVIII, *Industrial Chemistry and Chemical Engineering.*)

Tannin.—Nierenstein (*Berichte der chemischen Gesellschaft*, vol. 43, 1910, p. 628) has suggested that ordinary tannin is a mixture of digallic acid and leucotannic acid. He has succeeded in isolating both of these products from this mixture in the form of crystalline derivatives. Very often the chemical nature of complex products occurring in nature are studied in a synthetic way —that is, starting with simple substances whose structures are known, and building up the more complex. Now by knowing the chemical methods used for these syntheses the chemical structure of the complex natural products is determined. The elucidation of tannins by this method was first started by Emil Fischer and Freudenberg (*Annalen der Chemie*, vol. 372, 1910, p. 32). These chemists synthetized compounds closely related to tannins, which they named "depsides" (from the Greek δέψειν, to tan). For

an illustration of a depside prepared by them, carbethoxy-di-p-oxybenzoyl-p-oxybenzoic acid, $C_2H_5O_2C.O.C_6H_4.COO.C_6H_4.COOH$, might be mentioned. Nierenstein has also followed this line of investigation (*Berichte der chemischen Gesellschaft*, vol. 44, 1911, p. 837). He prepared such compounds as galloyl-ellagic acid which has tanning properties. This is of interest also since the tannin from *Polygonum bistarti* is supposed to be a condensation product of gallic acid and ellagic acid, and probably a galloyl-ellagic acid. It might be added that ellagic acid is considered responsible for the "bloom" that is often formed on tanned leather and therefore objectionable. By comparing the behavior toward gelatine solutions of several compounds closely related in a chemical way to the tannins, like gallic, digallic acid, ellagic acid, etc., the chemical constitutions of which are all known, Nierenstein has drawn the conclusions that the gelatine precipitation is dependent upon the presence of the group CO.O. (which he has named the "tannophor group"), the positions of the hydroxyl groups and the presence of a carboxyl group, and that the gelatine precipitation is apparently a chemical reaction and not a purely physical one, as has often been supposed.

Enzymes.—During the past year several chemists both in this country and abroad have been engaged in studying the chemical nature of enzymes. Although no really definite results have so far been obtained, Sherman and Schlesinger (*Journal of the American Chemical Society*, vol. 33, 1911, p. 1,195) have shown that the purest preparations of pancreatic amylase which they were able to obtain still possessed the composition characteristic of a protein. Mathews and Glenn (*Journal of Biological Chemistry*, vol. 9, 1911, p. 29) in their study of invertase have come to similar conclusions in regard to this substance. They further state that the protein is possibly of an albumose or peptone nature. Euler, Lindberg and Melander (*Zeitschrift für Physiologische Chemie*, vol. 69, 1911, p. 152) have also investigated invertase as to its chemical constitution. Their results are somewhat different from those obtained by Mathews and Glenn, in that their purest preparations showed a lower nitrogen content than some of the less active samples. This makes the question as to whether enzymes are proteins or not still an open one. In all these cases the purity of the sample of enzymes investigated were determined by their degree of activity. (See XXVIII, *Biological Chemistry*.)

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BIOLOGICAL CHEMISTRY

CARL L. ALSBERG

Proteins.—No radically new ideas on, or new constituents of, proteins have appeared recently, though a tyrosin-like substance is suspected by R. A. Gortner. Nevertheless, our knowledge of individual proteins has been much extended because many investigators, notably Abderhalden and Osborne, have actively followed out the two general lines of investigation laid down some years since by E. Fischer. The first line is constructive, and endeavors artifically to produce more or less protein-like substances by causing simple amino acids, of which all proteins are mainly composed, to combine to form more complex compounds. These, termed peptids or polypeptids, sometimes resemble some of the simpler natural peptones. The synthesis of protein is therefore no longer to be regarded as in the realm of the unattainable. The second line of research, on the contrary, is analytical. Its object is to resolve a given protein into simpler derivatives so as to gain an insight into its structure. The technique used for the purpose has been much improved by the application of the I. K. and A. M. Phelps method of esterification by T. B. Osborne and D. B. Jones. Unfortunately these methods require much substance, so that only readily obtainable proteins could be studied. Therefore the new method of D. D. Van Slyke, requiring less than ten grams, promises greatly to extend our knowledge. (See XXVIII, *Agricultural Chemistry.*)

Applications of Colloid Chemistry.—Equally important are the contributions of colloid chemistry, particularly on problems of adsorption, coagulation, and the general properties of protein, though these are not yet ripe for discussion. This may also be said of the very stimulating attempts to apply the principles of colloid chemistry to certain biological phenomena such as the formation of wood (Wislecenus), of concretions (Lichtwitz, Schade), and of œdema and nephritis (M. Fischer). (See XXVIII, *Sanitary Chemistry.*) These principles have also proved fruitful in another direction. Protein had almost come to be synonymous with "protoplasm." Such investigators as J. Loeb, v. Knoffl Lenz, H. Meyer, E. Overton, Zanger, and others have disposed of this view largely by dignifying the *rôle* of the fats, of the fat-like substances or lipoids, and of cholesterin. Protoplasm is now very generally regarded as an emulsion of proteins, fats, lipoids, and other substances (Lepeschkin, Alsberg). F. Czapek has gone further and made interesting observations on the *rôle* of surface tension; while O. Warburg has made use of the same principle to explain phenomena of cellular oxidation.

Fats and Lipoids.—The stimulus of colloid chemistry is not the only factor at work to dignify fats and lipoids. Many of the studies on cytolysis, or the dissolving of cells, and on hemolysis, or the leakage of hemoglobin out of red blood corpuscles, have attracted even more attention than the lipoids. When blood corpuscles, many bacterial and animal cells, or merely protein substances are injected into an animal, something is found to be formed in that animal which reacts with similar corpuscles, bacteria, cells, or proteins. An "antibody" corresponding to the particular "antigen" is found in its serum, which is specific for the particular antigen used. "It is in this way that immunity to a disease may in many cases be acquired. The close resemblance between the acquirement of hemolytic power and of immunity has concentrated on the study of hemolysis much of the work that is aimed at the study of immunity." (Leathes.) In hemolysis, however, the lipoids loom up large, because Bang and Forsmann have shown that all the substances con-

cerned in hemolysis are of a lipoid character. It is of the greatest importance to know that all antigens need not necessarily be protein. A chemical attack upon hemolysis is now possible, and this phenomenon has been freed forever from the thrall of the theory of the nature of immunity, which for more than a decade has cast its spell over most investigators. Probably before long the same thing may be said of immunity. This hope gains strength from Faust's isolation of the active principle of snake venom, which had been regarded as a toxine and therefore a protein. It proved to be a sapotoxin in no way related to protein, though in spite of its simple character endowed with all the properties of "neurotoxin," "cytotoxin," "cytolysin," "hemorrhagin," and "hemolysin," creations of the prevalent theory of immunity. This trend of work has also stimulated greatly the study of the organic chemistry of the fats and lipoids, particularly of the brain, hitherto a much neglected field (Leathes, S. Fränkel, Koch). (See XXVIII, *Agricultural Chemistry.*)

Carbohydrates or Sugars.—While Smolenski has found a conjugated glycuronic acid in beets, a new find for plants, no new simple sugar has been discovered. However, the constitution of the nucleic acids, which contain much carbohydrate, has been very nearly cleared up (P. A. Levene and W. A. Jacobs), and their cleavage by the tissue enzymes has been carefully studied (G. Pighini, P. A. Levene and F. Medigreceanu, W. Jones). This is important because these acids are constituents of cell nuclei, and bear some relations to uric acid and therefore, perhaps, to gout. The much discussed problem of glycolysis in animals, or enzymotic attack of glucose, has entered a new phase. P. A. Levene and G. M. Meyer found that under the combined action of muscle juice and pancreatic extract glucose is not destroyed as had been supposed, but is converted into a disaccharide by union with another molecule of glucose. This is important not merely for its possible bearing on physiology and diabetes, but also because it seems to be a new example of "reversible enzyme action." By this is meant that an enzyme may both hasten the decomposition and the synthesis of a substance, the preponderance of one reaction or the other depending upon conditions of concentration and the like. In plant physiology there has been an analogous discovery in regard to the favorable effect of phosphate upon yeast. W. B. Young has found that the yeast enzyme "zymase" causes the sugar to combine with phosphate to form fructose-phosphoric acid from every one of the fermentable sugars. In this fermentation dioxyaceton, not lactic acid, is a precursor of the alcohol (E. Buchner and J. Meisenheimer). Yeast may form carbonic acid from organic compounds like pyrotartaric acid in the absence of sugar (Neuberg and Hildesheimer). This phenomenon has been brought into relation with respiration.

Respiration. Oxidation.— Respiration is intimately associated with oxidizing enzymes, or oxidases, and reducing enzymes, or reductases. The reductases have hitherto been neglected—in fact their enzyme nature has been, and still is, doubted. Their study has been stimulated (A. Bach) by a new test to detect the heating of milk, Schardinger's reaction dependent upon the decolorizing of methylene blue-formaldehyde by raw milk only (W. Rullmann). In the field of oxidases, P. Battelli and L. Stern have found that tissue extracts may oxidize alcohol and succinic and malic acid. H. P. Bassett and F. Thompson have shown that oxidases may affect the formation of tannins. The enzyme nature of oxidases is also disputed. They may in fact be simple, perhaps inorganic, catalysts (W. Madelung).

Enzymes.—Indeed the tendency is to simplify conceptions of enzymes by explaining their astonishing properties. M. Holderer has in part explained their behavior in filtration and diffusion. C. S. Hudson and H. S. Paine, by showing that heat destroys dissolved invertase through increasing hydrolysis by water, have explained why dry heat is so much better withstood by enzymes. S. and S. Schmidt-Nielsen have shown that

the mechanical destruction of enzymes by shaking is not real, but due merely to the concentration of the enzyme in the foam and on other surfaces. (See XXVIII, *Organic Chemistry.*)

Intermediary Metabolism.—There have been notable advances, particularly in regard to proteins. L. Blum and W. D. Dakin have shown independently that β-oxybutyric acid, which is so important in diabetes, is formed from acetacetic acid and not vice versa. E. Friedman and Maase find this reaction brought about by a ferment, "ketoreductase." Embden and Wirth find that the process may be prevented by the presence of certain amino-acids and related substances, a fact that explains why diabetics excrete less acid when they eat sugar. On the other hand, it has been shown by Embden and Schmitz, E. Friedman, and F. Knoop and E. Kertess that non-nitrogenous substances may be condensed with inorganic compounds of nitrogen to form amino-acids. The foundation has therefore been laid for an understanding of the formation of amino-acids and therefore of protein from non-nitrogenous food-stuffs. There is evidence that the process is a reversible enzyme reaction. (See XXVIII, *Chemistry of Food and Nutrition.*)

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CHEMISTRY OF FOODS AND NUTRITION

H. C. SHERMAN

Food Laws and Standards: Supreme Court Decisions.—During the year 1911, the first two decisions of the U. S. Supreme Court bearing upon the Food and Drugs Act were announced. The first opinion related

to the powers of the government to pursue adulterated food which had been shipped from one state to another. The case related to adulterated eggs shipped from St. Louis, Mo., to Peoria, Ill., for use in baking (not for sale) and seized by the government in the storehouse of the bakery where they had been stored along with other supplies. The egg company held that the law does not apply to an article which has been shipped, not for sale, but solely for use as a raw material, and that the U. S. District Court had no jurisdiction because the goods had passed out of interstate commerce and become mingled in the general mass of the property of the State of Illinois. The Supreme Court found both of these positions untenable and stated in its decision upholding the government that the adulterated eggs were illicit articles which could not acquire immunity by becoming a part of the general mass of property of the state, and that the confiscation or destruction of such articles is the especial concern of the law.

Misbranding.—The second case to be carried through the Supreme Court related to the construction of that paragraph in the law which provides that the term "misbranded" shall apply to all drugs (or foods, etc.) "the package or label of which shall bear any statement, design, or advice regarding such article or the ingredients or substances contained therein which shall be false or misleading in any particular. In view of the context the Court decided that the phrase "false or misleading in any particular" applies only to representations as to the composition or ingredients and not to claims as to curative properties. Immediately after the announcement of this decision President Taft recommended to Congress such amendments to the law as shall prohibit fraudulent representations as to the curative properties of "patent" medicines, but no such amendment has yet been passed. (See VII, *Law and Jurisprudence.*)

United States District and Circuit Court Decisions.—Of the cases tried in the U. S. District and Circuit Courts the three bleached-flour cases are probably the most important. The essential charges brought by the government against the bleached flour were: (1) that a substance, "nitrites," had been mixed with the flour so as injuriously to affect its quality and strength; (2) that the flour was "mixed, colored or stained" in a manner whereby damage and inferiority were concealed; (3) that the flour contained added deleterious ingredients, "nitrites." The expert evidence was conflicting, but the government won all three cases and appears to have been sustained by the courts in each of its main contentions. Of equal scientific interest is the "frozen egg case" in which the government prosecutors were less successful. The government seized 342 cans of frozen eggs as decomposed, chiefly on the ground that the material contained 100,000 to 10,000,000 bacteria per cubic centimetre, largely of the colon type, and that the injection of one-half cubic centimeter into a guinea pig was followed by death within 24 hours. Testimony showed that the eggs were sound to taste and smell and behaved normally in cooking; that good eggs have been known to contain as many as 1,360,000,000 bacteria per cubic centimetre, and the connection between the oviduct and the alimentary tract in the hen is such that colon bacilli from the intestine may invade the egg before it is laid, so that the presence of the bacteria and the death of the guinea pig did not show that the material was decomposed; and that the amount of ammonia (which was considered the best index of decomposition) was about the same in the frozen egg material as in ordinary market eggs. The Court held that the government had not shown that the eggs were decomposed or unfit for food.

Notices of Judgment.—That the administration of the national law has been active and efficient is shown by the large number of Notices of Judgment, nearly all of which record successful prosecutions by the government. During the first four years that the law was in force (up to Jan. 1, 1911) there appeared 705 of these notices, an average of 179 per year; during the first 8 months of

1911 there appeared 329 notices. It promises well for continued success in the administration of the law that these notices show an almost universal disposition on the part of the courts to uphold the standards of composition which are not incorporated in the law itself but which have been adopted by the Secretary of Agriculture, usually on the recommendation of the Association of Official Agricultural Chemists.

Referee Board.—The vacancy on the Referee Board of Consulting Scientific Experts, caused by the death of Prof. C. A. Herter of Columbia, has been filled by the appointment of Prof. Theobold Smith of Harvard. During the year this Board has reported that the continued use of saccharin for a long time in quantities over three-tenths of a gram per day is liable to impair digestion, and an official ruling has been issued against interstate commerce in foods containing saccharin on and after Jan. 1, 1912. (See XXII, *Agricultural Legislation.*)

Food Requirements in Nutrition.—Since this subject was not treated in the YEAR BOOK for 1910, it seems best to give here, as a point of departure for subsequent annual reports, a brief statement of the standpoint reached through recent work, the results of which the author has attempted to summarize and discuss elsewhere.[5] Recent developments have modified the custom of discussing food requirements merely in terms of protein, fat, and carbohydrates. On the one hand, it has been found that the proteins, fats, and carbohydrates eaten are to such a large extent used interchangeably as sources of energy in the body, that much of the former discussion of the ratios which these foodstuffs should bear to each other in the diet can now be dispensed with, since the energy conception unifies the problem of the need for foodstuffs to be burned in the body and permits of the expression of total food requirement in terms of energy or fuel value. On the other hand, the needs of the body for building material, whether for growth of tissue or merely for replacement of unavoidable waste, can no longer be discussed in terms of protein alone: first, because the proteins differ materially among themselves in chemical structure and nutritive relations, and, second, because the diet may furnish ample protein and yet fail to supply the needs of the body for one or more of the essential structural elements, such as iron or phosphorus.

It is now understood that the amount of food required in nutrition under normal conditions depends chiefly upon activity, age, and the size and composition of the body. These factors are more far-reaching than at first appears, and really cover the causes of most of the differences commonly ascribed to individuality, temperament, sex, and even climate and season.

Among adults of ordinary physique, muscular activity far outweighs all other factors in determining the rate of energy metabolism, and consequently the amount of food required. An average sized man, fully fed and living at rest, will metabolize energy to the extent of about 2,000 to 2,200 large calories per day. The largest amount of food which he can be induced to eat will probably increase his daily metabolism 10 to 20 per cent., but by muscular work he may increase his metabolism 100 to 200 per cent.

On the other hand, the amount of protein metabolized depends mainly upon the food, and need not increase with muscular activity if the consumption of fats and carbohydrates is increased sufficiently to supply the energy needed for the work. Chittenden's investigations have shown that, with food of sufficient energy or fuel value, from one-half to two-thirds of the amount of protein which the average American ordinarily eats is sufficient to meet the requirements of nutrition. There is as yet no concensus of opinion as to whether on this account it is desirable that the consumption of protein be generally reduced, but we may say that the food habits now prevalent in this country make it altogether probable that a freely chosen diet of sufficient total food value to meet the energy requirement will ordinarily furnish an abundance of protein. The results

of such investigations as those of Osborne on the chemical differences among proteins make it evident that we must consider the kind of protein eaten as well as the amount.

Just as necessary as the nitrogen compounds, though not required in such large amounts, are the compounds of iron, phosphorus and other elements essential to the structures and fluids of the body. It has often been stated, and is probably generally assumed, that a diet which furnishes sufficient amounts of protein, fat and carbohydrates may be trusted to furnish accidentally an adequate supply of all the so-called "ash constituents" except common salt, of which a great abundance is added as a condiment. Recent studies indicate that there are at least three elements which cannot thus be safely left to chance. These are iron, phosphorus, and calcium.

The role of these elements, particularly phosphorus, is now being studied in a number of laboratories and it is hoped that the annual reports of the next few years will show substantial progress in our knowledge of this important aspect of the chemistry of food and nutrition. (See XXVIII, *Agricultural Chemistry*, *Biological Chemistry*, and *Sanitary Chemistry*.)

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SANITARY CHEMISTRY

E. M. CHAMOT

Biochemistry.—In general it may be said that the year's strictly new work in sanitary chemistry has been the tendency to throw greater emphasis upon biochemical tests and methods and to apply the hypotheses of colloidal chemistry to explain many ill understood facts. In the field of applied biochemistry may be cited, as types of a large group, such analytical methods as the identification by means of precipitating serums, of the kind of animal from which a given sample of meat has been obtained; the differentiation of natural from artificial honey by testing for the presence of the ferments catalase, amylase and invertase; and the recognition of pasteurized and heated milk by the absence of both oxidases and reductases.

Colloidal chemistry has offered an explanation of such phenomena as the cleansing power of soap: the removal of suspended matter from sewage; the passage of aluminum compounds through mechanical filter beds and their subsequent precipitation in water mains; the difference in the behavior of human from cow's milk in the stomach of infants; the mechanism through which ground waters may become charged with iron and manganese; and the cause of the red staining of porcelain in bath and toilet rooms by water.

Ventilation.—There has been no change in the generally accepted opinion that the temperature and humidity of the air in a closed room

are responsible for more discomfort than a slight increase above the normal in the carbon-dioxide content. Studies of the organic matter in the air of badly ventilated rooms and attempts to isolate the hypothetical toxines exhaled by human beings have thus far been too inconclusive to throw any light upon this much mooted point. A committee appointed by the American Public Health Association has had printed for distribution *Provisional Methods for the Bacteriological Examination of Air*. With these uniform methods in the hands of investigators, another year should give comparable bacteriological data of value.

So far as the comfort of workmen in factories is concerned, it has been shown that the room temperature should not be allowed to rise above 70° F. and that the humidity should be below 70 per cent. of saturation. Substantially similar results have been obtained in an exhaustive study of Pullman sleepers.

The influence upon health of the presence in the air of very small amounts of many different poisonous vapors and gases has received considerable attention, especially in connection with the air of submarine boats. These investigations, while still incomplete and inclusive, seem to indicate that many foreign gases may at times be present and, although in infinitesimal amounts, have a far more baneful influence upon health than has been believed. Similar studies of occupational diseases have shown noxious gases and bad ventilation to be either a primary or secondary cause.

Sewage Disposal.—Biochemical methods of treatment still take precedence over all others. The Emscher or Inhoff tank is being successfully employed by a number of American cities, with the claimed advantage of being at all times free from objectionable odors. In the examination of sewage effluents for ascertaining whether a plant is properly functioning, tests for putrescibility still take first place, and although various modifications of the Caro methylene-blue test are still widely used, new methods have been devised which bid fair to prove more satisfactory. (See XX, *Sewage Disposal;* and XXXII, *Civil Engineering.*)

Disinfectants.—The year has produced the usual large number of disinfecting materials placed on the market under a great variety of trade names. Most of those of European origin have been thoroughly investigated, but not so with the American. Of noteworthy results, the most important is the discovery that the addition of acids, especially oxalic acid, to phenols and cresols greatly increases their toxicity to bacteria. Much progress has also been made in rational methods of standardizing disinfectants, thus permitting a ready means of comparing their values with respect to different species. For example, Phelps has shown that disinfectants differ in three ways, or, in other words, have three constants: they vary (1) as to the rapidity of their action (velocity constant K); (2) according to concentration (concentration exponent n); and (3) in their action according to temperature (temperature coefficient θ). Given these three constants of any disinfectant, any other set of conditions may be calculated according to the equation:

$$\log \frac{B}{b} = KC^n t K_{T^\circ} = K_{20^\circ}\, \theta^{(T-20)}$$

where B and b = initial and final number of bacteria present, t = the elapsed time, C = concentration, and K, K_{T° and K_{20° the velocity constants.

Fumigants.—For fumigation formaldehyde still retains first place, with the concensus of opinion in favor of generating the gas from paraform by means of potassium permanganate and water to which a little alkali is added.

Fumigation for the destruction of insect vermin has received considerable attention, though but little satisfactory progress has been made, save the demonstration that different fumigating agents vary enormously in their toxicities according to the species of insect. Thorough tests of hydrocyanic acid for this purpose have shown its destructive power to be overestimated, while that of burning sulphur has been underestimated.

Food.—International standards of purity for foods have been adopted for practically every food material; while in each country having pure food laws such changes in wording or in the standards themselves have been made so as to afford even better protection for the consumer. More and more stringent enforcement of existing laws is being demanded by the public. Cold storage and the shell fish industries have received the greatest share of attention, with the result of vastly decreasing the danger of transmission of disease by the products of these industries. The discovery of appreciable quantities of heavy metals such as lead, tin, zinc and arsenic in many food materials in which their presence was not suspected, has led several sanitarians to suggest that these impurities may have been the cause of many cases of obscure illness remaining still unexplained. A committee of experts of recognized international standing, appointed by the French Academy of Medicine to investigate and report upon the question of coloring matters added to foods, has rendered an opinion that no aniline colors should be permitted in true food materials, but certain aniline colors, of which a list is given by the Committee, may safely be employed for coloring confectionery, since it is assumed that products of this nature are consumed only irregularly and in such small quantities as to preclude danger of ill effects from the color. The finding against aniline colors is based upon the alleged harmful effects of the dyes and also because most of them are apt to contain harmful impurities. The warfare against the use of preservatives is as active in Europe as in America, and their use is universally condemned. European manufacturers of fruit juices and fruit products almost unanimously insist that it is impossible to manufacture good salable articles unless preservatives are permitted, consequently search is being made for substances having germicidal properties which are not specifically forbidden. The most important of these new preservatives are formic acid and hydrofluoric acid-calcium carbonate. The first is difficult of detection and is claimed to be normally present in many food products. The second when properly used should, it is asserted, leave no trace in the finished article, for after adding hydrofluoric acid to the fruit juice in sufficient quantity to kill bacteria, moulds and fungi, calcium carbonate is added in slight excess of the amount necessary to completely take up the fluorine as calcium fluoride. This salt first passes into colloidal suspension, but later separates and is removed by filtration, thus eliminating, it is claimed, all the preservative used. Neither method has yet received a favorable endorsement by sanitarians. (See XXII, *Agricultural Legislation;* and XXVIII, *Chemistry of Food and Nutrition.*)

Water Purification.—More attention is being directed to the quality of the bottled mineral and table waters on the market than in the past, with the result that the waters of many springs enjoying great popularity have been found to be grossly sewage polluted. A number of these waters have been withdrawn from commerce; in the case of others, the environment of the springs has been improved and the waters rendered safe. The composition of most of the famous mineral waters of Europe and America at their source is being ascertained by unbiased analysts and the results are becoming common knowledge through publication in various reports and journals.

In the application of the principles of filtration to the purification of municipal supplies, the rapid American or mechanical systems have kept the ascendency. Double filtration, using so-called pre-filters, roughing filters or scrubbers, is becoming more prominent, in spite of statements of conservative engineers that such systems are seldom sufficiently economical to warrant their installation. With the perfecting of disinfection by means of hypochlorites and ultra-violet light, there appears to be a tendency to supersede slow sand filtration by systems permitting higher rates of filtration per acre per day. The problems of "red water" (rusty water and the staining of porcelain), and of disinfection by means of hy-

pochlorites (bleaching powder) and by ultra-violet light have received the greatest amount of attention and discussion. The classes of water most liable to give rise to red-water plagues have been quite definitely ascertained, but the exact causes leading to the trouble are still somewhat conjectural, further than that the iron carried by the objectionable water is in colloidal suspension and solution. Nor are the present remedies satisfactory or adequate. The application of ultra-violet light to the disinfection of water has passed sufficiently beyond the experimental stage to permit its being classed as practical, as demonstrated by the fact that after experimental competition with other systems it has been selected by the city of Marseilles, France, for the purification of its municipal supply. This new installation uses Cooper-Hewitt mercury-vapor lamps of the Westinghouse system with quartz tubes, the water to be treated with the ultra-violet rays being first clarified by Puesch-Chabal roughing filters. The cost of treatment is estimated to be about $10 per million gal. to accomplish a bacterial removal of 99 per cent. and the probable complete destruction of cholera, typhoid and colon-group organisms. Using mercury-vapor lamps with quartz tubes, a sterilization of the water to the depth of two feet may be expected in waters free from turbidity.

The application of ozone to water disinfection on a large scale has proved to be beset with so many mechanical difficulties that interest is being lost in its latent possibilities.

No method of water purification has up to the present time attained such favorable recognition and immediate and widespread acceptance as has the use of calcium hypochlorite (bleaching powder). There are already in America alone several hundred municipalities employing this material either continuously or during periods of bad water. During the year 1911, hypochlorite treatment has proved of inestimable service in promptly checking water-borne typhoid epidemics in a number of cities, while its immediate application to waters suspected of having become infected has in several instances undoubtedly prevented epidemics. The mechanism of the reaction appears to be first the liberation of hypochlorous acid, which in turn decomposes into hydrochloric acid and active oxygen. It is therefore believed that the destruction of bacteria is due to oxygen and not to chlorine. Fecal organisms, typhoid and cholera, appear to be peculiarly susceptible to the action of bleach, while on the other hand spore-forming bacteria are resistant. Thus it happens that occasionally a water is met with where there is a very marked increase of bacteria in the water mains following hypochlorite treatment. Used in connection with filtration plants of the rapid or mechanical type, it has greatly reduced the cost of operation with an actual increase in bacterial efficiency. For the removal of *B. coli* and *B. typhosus*, hypochlorite is manifestly superior to filtration, and there is thus danger that it will be regarded as a substitute therefor. Its chief value is conceded to be in emergency treatments and use in connection with over-burdened filtration plants, but always under very careful expert supervision. A further valuable use of hypochlorite in water purification has been its successful application to the disinfection of swimming pools and tanks, to the clearing and cleaning of old or befouled new pipes and pumps and to the disinfection of sewage, slaughter-house effluents, etc. To render a water safe so far as cholera and typhoid are concerned usually requires but a fraction of a part per million of available chlorine, but for complete sterilization quantities are generally necessary such as communicate to the water a disagreeable odor and taste.

The chief objections raised to the use of bleach are: the evil effect of the fumes upon the attendants employed to apply the chemical; its corrosive action on pipes, metals, wood and in fact most materials other than carefully prepared concrete; the danger of under-treating a water and allowing a municipality to exist under a false sense of security; and the giving of a "medici-

nal" taste to the water as a result of over dosage. Thus far no investigator has been able to detect any objectionable compounds in properly treated waters, but there are numerous instances where water has proved unfit for household use following improper treatment.

Hazen's theorem that for every typhoid death prevented by an improved water supply, two other deaths in that municipality are also prevented, has been subjected during the year to a searching inquiry, with the result of being declared to be a conservative statement. (See XVIII, *Public Health and Hygiene;* XX, *Water Supply;* and XXXII, *Civil Engineering.*)

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AGRICULTURAL CHEMISTRY

Frank K. Cameron

The rapid development of food work in the past few years, following the passage of the pure-food laws of the federal government and the several states, diverted the energies of a large proportion of American chemists who had been previously engaged in problems of agricultural chemistry. Nevertheless a very creditable showing can be made for America in the past year, in quality if not quantity. The distinguishing feature of the year has been the pronounced tendency to get beyond the investigations of routine methods and apply the more advanced ideas and technique of physical, inorganic and organic chemistry to agricultural problems. An important factor has been the annual federal appropriation to the several State Experiment Stations, known as the Adams fund, which can be used only for investigations. No inconsiderable proportion of this fund has been available to the chemists of these state institutions.

In this summary it has been deemed best to present a general retrospect, and for detailed abstracts and references to the original papers, the *Experiment Station Record* (U. S. Department of Agriculture, Washington, D. C.), and *Chemical Abstracts* (Am. Chem. Soc., Easton, Pa.) should be consulted.

Dairying.—The production of casein has been shown to be a probably important dairy problem, this substance having a considerable value in the manufacture of buttons, artificial silk, glues, etc. It seems that a considerable industry in casein for such purposes exists in Germany. In cheese making the production of acids and esters from non-nitrogenous constituents has been found to have much importance on the flavor and aroma of the product. Lactic acid is formed from lactose, but possibly from other sources also, as the content increases for months. The lactic acid is of the racemic type. No enzyme capable of forming lactic acid has been isolated from cheese. The lactic acid is probably the principal but not the only source of acetic and proprionic acids in cheese. Proteolysis may not be important, but there is some formation of butyric and caproic acid. Succinic and other acids have been identified. The esters are mainly ethyl esters, and these appear to have a dominant part in determining aroma, but a lesser part in determining flavor, this latter being largely dependent on nitrogenous compounds as well.

Stock Feeding.—The composition of different parts of the carcass, especially as regards the nitrogen and protein content, has been shown to bear a more or less definite relation to the character of nitrogen constituents of the feed, and there has been accumulated quite a mass of detailed information concerning this relation. The respiration calorimeter is proving of great value in assisting in the interpretation of this relation and the mechanism of the

chemical transformations involved. It seems that the nitrogen content of feed necessary for the most efficient production of protein is much smaller than has been generally supposed. (See XXII, *Chemistry of Foods and Nutrition.*)

Plant Chemistry.—Oxidations and reductions in plant and animal tissues and in soils have received increased attention. The oxidizing power of the soil on both organic and inorganic substances is partly enzymotic, partly due to inorganic agencies, and can be controlled in some measure by the addition of manures, salts and the usual cultural operations. The exact nature of the processes involved is yet obscure, although a fair start has been made in this field of enquiry. Many reductions have been recently studied, some being produced by the roots of living plants. Here again there is much doubt as to how far the processes are enzymotic. Particularly interesting is the recent advance in the knowledge of the chemical properties of chlorophyll (note especially Willstälter and Marchlewski), a substance of particular importance to plant chemistry because it is necessary to the synthesis of sugar in green plants by the action of sunlight. It is believed that the first step in this synthesis is the reduction of atmospheric carbon dioxide to formaldehyde. Apparently this reduction has been accomplished experimentally (Usher and Priestly) with artificial films of chlorophyll, carbon dioxide and water, exposed to sunlight, formaldehyde and hydrogen peroxide being formed. It is suggested that in the plant the enzyme catalase, which decomposes hydrogen peroxide, has a part. This work has evoked criticism and suggestions which bid fair rapidly to increase a knowledge of fundamental importance to the development of a rational crop control.

Until recently plant chemists confined their attention to the study of substances occurring in abundance, or endowed with some striking property, such as color, odor, taste or toxicity. Animal investigations, particularly upon the "extractives," have shown that these scarce substances often represent transitory phases of metabolism and therefore throw more light on the hidden steps than the more abundant end-products. This is now also realized by plant chemists, and the resulting study of the non-protein nitrogen is throwing much light on the intermediary metabolism of plants. It has led to the discovery of creatinine in plants and soil; to the identification of veruin with guanosin derived from nucleic acid, etc.

The study of plant lipoids has been stimulated by the problems connected with the occurrence of organic phosphorus in phytin and other compounds, and by the question of their utilization by animals. It seems clear that inorganic phosphorus of food may be utilized more or less perfectly by animals while only a portion of that in phytin is absorbed. Compounds of phosphoric acid, perhaps in the form of pyrophosphoric acid, with inosite, resembling phytin, seem to be very common stages in the metabolism of phosphorus. This is probably the main role of inosite. Besides phytin the fate of cellulose in the animal economy continues to attract attention. It has been definitely shown that it does not give rise to carbohydrate, and its nutritive value is probably due to the fatty acids formed by bacterial action in the digestive tract. (See XXVIII, *Biological Chemistry.*)

Soils.—In the investigations of soil problems, there has been great activity during the past year. There has been brought forward an increasing weight of evidence showing the complexity of the mineral components and constituents of the soil, and it appears that not only does every soil contain a large number of rock-forming minerals, together with the decomposition and degradation products from these minerals, but that it contains nearly, if not quite, every mineral element for which methods of analysis exist. Furthermore, it also appears that these constituents are to be found in the ashes or mineral residues of the plant grown on the soils, and there is a growing conviction that many of these constituents, if not necessary to plant growth, nevertheless affect it ap-

preciably and require a consideration not hitherto given them. The identification of mineral species in the soil has been receiving more than usual attention. It has, for instance, been proposed to identify the predominating phosphorus minerals in a soil by the action of certain arbitrary solvents whose action on known minerals has been previously observed. Far more important, however, has been the development of microscopic methods, in which the use of oil immersions, inclined illuminations, with the determination of indices of refraction and other characteristic optical properties, make possible the identification of the minute particles in the "silt" and "fine sand" mechanical separations. Not only are the minerals thus determined with precision, but much light is thrown on the history of the soil by certain characteristic appearances, as for instance, primary and secondary quartzes.

The complexity of the organic constituents of soils or humus has been further shown by the isolation and identification of definite compounds, so that now about thirty organic substances of some eight or nine chemical types have been extracted from soils. Some of these substances seem to be quite commonly distributed, while others are characteristic of particular soils or soils under particular conditions. Some of these substances have been shown to have a detrimental effect on plants, while others are neutral or even stimulating. The origin and formation of these substances and their relation to different types of vegetation are being actively investigated and promise early results of the first importance to practical agriculture. The possibility of utilizing some of these substances, as the nitrogenous compounds found in great quantities in certain swamp areas, is indicated by recent investigations.

Intimately associated with the chemical and mineralogical investigations have been biological and physical studies of considerable moment. An interesting case is the accumulation in certain soils of excessive amounts of nitrates, sufficient in fact to affect vegetation disastrously.

On the whole, this year's work upon soils, especially in America, has tended to show more clearly and distinctly the lines between two schools of thought. One of these, the "static" school, while admitting that the physical and biological properties of a soil sometimes have an importance for crop production, holds that this production is always mainly a matter of the percentage of certain mineral constituents or "plant food" in the soil, and that this factor in crop production is independent of all other factors. In the other, the "dynamic" school, it is held that crop production is the complex resultant of a number of factors, all of which are mutually interdependent and no one of which can be affected without corresponding changes in the others, that the soil is a heterogeneous mass, containing inorganic and organic substances and living organisms all continually in processes of change, the processes of change or movements being quite as important as are the substances themselves; that in consequence of the large number of components and of the processes taking place, and the interrelations involved, each soil is an *individual* with its more or less definite characteristics, including crop producing power.

Fertilizers.— The differences between the two schools has been most marked in the attitude toward commercial fertilizers. The static school regards fertilizers as plant foods only, and cites in support of this view that an increased crop usually follows the use of fertilizers, and especially when chemical analysis has shown the soil to be "deficient" in some constituent or constituents. The dynamic school holds that if the fertilizers were merely plant foods, their use should *always* be followed by increased growth; but this is not the case. They should always be more efficient on poor soils, or soils which show on analysis a deficiency; neither is this the case. Generally fertilizers are more efficient on "good" soils than on "poor" soils. It is further held that the soil solution, rising in a capillary stream from the depths of the soil, generally by normal natural processes, supplies enough mineral nutrients for a

crop. Consequently, it is claimed that fertilizers must have other functions of equal importance to the food supply, among these being direct effects on plants, as the hastening of vegetative growth or flowering and seed production; the control at will of relative growth of roots and aerial portions of the plant; the hastening or retarding of the oxidation processes associated with the root systems of higher plants; the functioning of bacteria, molds and enzymes in association with higher plants or incidentally present in the soil. The optimum water content, the movement of the film water, the absorption and conductivity of heat, are affected by fertilizers. The relation of oxidation and reduction processes is affected, and, in fine, it appears that every biological, physical or chemical property of the soil which may affect crop production is itself modified by fertilizer applications.

It is further claimed that the same generalization applies for the two other general methods of soil control, tillage and crop rotation; and that an intelligent soil management is possible only with a recognition of the interdependence of these general methods.

ELECTROCHEMISTRY

CHARLES F. BURGESS

Electrochemistry is an efficient and versatile servant in various departments of industrial activity, and a record of its achievements would include much of the progress which has been taking place in the fields of metallurgy, chemical manufacture, electrical engineering, farm engineering, and numerous other technological branches.

Electrometallurgy.—Electrochemistry, of all the fields of technical accomplishment, is preëminently one of research and investigation. An important electrochemical achievement is at once appropriated by some branch of technology. The record of recent accomplishment in metallurgy makes frequent reference to the electric furnace in the refining of steel, the production of alloys, the manufacture of the remarkable new ductile tungsten, and in other refining and recovery operations. The effort has been continued to make the electric zinc furnace a success, and although much work has been done, the method for effecting efficient condensation of zinc vapors in large quantities has not as yet been announced. (See also XXIII, *Metallurgy;* and XXXII, *Electrical Engineering.*)

Smelter Fumes.—It has been asserted that there is hardly a metallurgical problem which does not have its electrochemical solution, and while this may be a broad assertion, it is truly remarkable how many resources electrochemistry offers in its electrolytic oxidation and reduction methods, with its varied forms of electric heating, electrical osmosis, high-tension discharge effects, electrostatic concentration, condensation and separation, and the high-frequency wave or radiant energy influence on the properties of matter. The electrostatic condensation of metallurgical dust and fume appears to have become a practical achievement, and the announcement has been made that the Bureau of Mines through the coöperation of Prof. Cottrell has undertaken exploitation of this effect of electrical energy in the interests of the American public. (See XXII, *Copper.*)

Perkin Medal.—The fifth annual award of the Perkin medal for notable achievement in applied chemistry was made this year to Dr. Charles M. Hall, for his notable electrochemical discoveries which led to the creation of the aluminum industry in this country.

Carbon Bisulphide.—While there appears to be no noteworthy new chemical product which is manufactured electrolytically, the chemical industries are becoming more and more dependent upon electrical energy. Carbon bisulphide is now made exclusively by the electric furnace. Reports that this chemical could be used effectively in protecting wheat from the ravages of insects created such a sudden and tremendous demand for this material during the past season as to exceed the capacity of the existing furnaces.

Carbon tetrachloride, made from chlorine, a product of the electrolytic cell and carbon bisulphide of electric-furnace origin, has been available as a cheap material for several years. It has recently come into extensive demand through the appreciation of the fact that it is a most useful agent in fighting fire. It can render naphthalene non-explosive, and is also an efficient fire extinguisher, furnishing a dense heavy gas which quickly suppresses a flame. It has also found a large market as a solvent and cleaning agent.

The fixation of atmospheric nitrogen by electric-furnace methods has become an established industry in France as well as in Norway, where the monopoly was formerly held. This country, with its more costly power, has not made this industry a commercial success, and we are looking toward future experimentation to find how the nitrogen can be "fixed" with less energy consumption. The cyanamides, another electric furnace product useful for fertilizer purposes, is a domestic product.

Electric Furnaces.—From the standpoint of the electrical engineer, electrical heating has become so common that electric cooking utensils now furnish a large percentage of the station load of some of the more progressive companies, and electric furnaces for melting metals, heat treating steels and numerous other industrial operations have become so numerous as to be considered no longer an experimental proposition. (See XXXII, *Electrical Engineering.*)

An interesting new type of furnace has been announced recently by Carl Hering. It embodies the use of a peculiar property of the electric current when flowing at a high density through a column of liquid metal. This property, known as the "pinch effect," tends to cause a contraction or pinching off of the column, as well as a violent agitation of the metal subjected to the action. The Hering furnace is intended for the heating of metals above the melting point. One type of this furnace consists of a metal container lined with refractory material. Through this lining a channel is placed, and it is through this channel that the current flows, the molten metal acting as one of the electrodes. The heat is generated principally in this channel, the metal is projected into the bath and a vigorous circulation is described for the furnace in operation.

Electrolytic Corrosion.—It may be noted in *The Engineering Magazine's* index to current technical literature that under the division "Electrochemistry" a large percentage of the references relate to corrosion. That the corrosion of iron and other metals becomes a problem for the electrochemist is due to the fact that the electrochemical theory is now generally accepted to explain corrosion phenomena. Some interesting and important work has been done in this field during the past year. An important addition to the literature on this subject is the *Corrosion of Iron and Steel,* by J. Newton Friend, consisting largely of an analytical presentation of past experimental work. Various important papers have also been presented, one of them being the "Report of the Corrosion Committee" of the Institute of Metals. All of the papers serve to indicate, however, that there is much room for further investigative work on this important subject.

There appears to be an increased interest in "electrolysis," the term commonly applied to that type of corrosion on underground structures due to stray current from electric railways. The increased interest in this type of corrosion is due to an increase in corrosion damage and to a more thorough appreciation of the problem. It is becoming generally understood that concrete is not an infallible protection to iron and scarcely any protection against electrolysis. Agitation is prevalent in many of our larger cities demanding relief from this damage. A report presented to the Engineers' Society of Western Pennsylvania describes the "drainage system" as a cure for electrolysis, as demonstrated by its success in Pittsburg. This report has been vigorously attacked as being untrustworthy, by various authorities who took part in the discussion. (See XXXII, *Civil Engineering.*)

An important factor in the elec-

trolysis situation is a report recently made by a German commission which has been working for several years on a study of this problem. This report recommends a maximum track potential of 2.5 volts as the remedy. The Bureau of Standards, of Washington, announces that it has undertaken an exhaustive investigation of the problem.

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

WILLIAM H. WALKER

Definition.—In combining the topics of industrial chemistry and chemical engineering in the volume for 1911, the YEAR BOOK but reflects the usage which now attaches to these two expressions in the chemical profession, and brings out the fact that there is no real distinction between them. The development of chemical engineering as a special branch of engineering has taken place in a manner exactly analogous to that of mechanical or electrical engineering, described by Mr. Kent on another page of this volume. (See XXXII, *The Profession of Engineering.*) The chemical engineer is one who can devise, construct, and operate industrial plants based upon chemical reactions. In contrast to the work of the purely research, or strictly laboratory chemist, chemical engineering involves not only a fundamental knowledge of chemistry, but also a sound knowledge of those related mechanical and electrical subjects, which are essential to carrying into execution on an industrial scale, the chemical reactions which in themselves are the result of, and form the subject matter of, general chemistry. But industrial chemistry is the same thing, namely the carrying out of a chemical reaction, or a series of reactions, on a scale sufficiently large to make the product industrially important. Since the application of chemical reactions to industrial work is also the province of the chemical engineer, it is obviously impossible to distinguish in a paper such as this between the progress of the year in the field of industrial chemistry, and in the field of chemical engineering.

There are three general lines along which marked progress has been made in the year just passed. These movements, while not limited to this period, have in this time taken such tangible form that the forward movement in chemical engineering can be best appreciated by a short description of each.

Education of the Chemical Engineer.—Understanding this term broadly as above described, and as distinguished from an investigator in pure chemistry who has no thought of the application of the principles he discovers, it can be said that there is a general awakening among the employers of chemical engineers, to the desirability of having them more fundamentally trained for the work which they are to undertake. This has taken the form in the American Institute of Chemical Engineers, of a thorough canvas of the large employers of chemically trained men, and also of the teachers of chemistry in the universities and technical schools, by a competent committee, with the intention of outlining a course of study, which as a consensus of all concerned will produce the man who can most rapidly advance himself by advancing the interests of his employer. It is expected that this report will be ready for publication in the very near future.

In the Industrial and Engineering Section of the American Chemical Society there is also much discussion of the proper educational training for the chemical engineer, and at the winter meeting, held at Minneapolis the first of the year, there was an entire session devoted to this subject. (See *Journal of the American Chemical Society*, April, 1911). Such a general interest in the education of the men who are to carry forward the work of applied chemistry cannot but have a marked effect upon our industrial progress.

Attitude of Employers.—There still lingers in the minds of many the idea that a "chemist" is but another name for a pharmacist, or an apothecary; in fact, the familiar sign "family chemist" over a drug store indicates the existence of the old use

of the word. But the work of the chemist long ago ceased to be that of mixing and dispensing chemicals in the form of drugs and medicines, and became that of controlling by analytical means the process and product of chemical factories. Here he remained for many years; and this must continue to be one of the important spheres of the chemist's work. But recently the American manufacturer has awakened to the fact that he is behind the times in the efficiency of his plant, and that his process is frequently a very wasteful one. Hence the chemically trained man is not only being expected to keep in successful operation an existing and well understood process, but is asked to improve the old and to devise new ones. In other words he must be more than the chemist of ten years ago, and must have some training in the principles of original research on the one hand, and have a fundamental knowledge of mechanical and electric engineering on the other.

Laboratories for Research.—A third movement which in the last year has assumed strikingly large proportions is the establishment in connection with manufacturing plants of organizations equipped to carry on work of investigation incident to the routine of the factory. This is due in the last analysis to an impatience on the part of the manufacturer to wait for discoveries to be made in the laboratories of educational institutions. He is willing to meet the expense of an organization whose object is to discover new materials, new processes, and improvements in existing processes. The demand for men to fill positions in laboratories of this kind is greater than the present supply. It is a very healthy sign and argues well for the chemical industries of America.

Experience has proved that one of the most difficult problems of the staff of a research laboratory is the introduction of the laboratory results into actual operation. The reason for this is largely psychological. The training, mental qualifications, and indeed the temperament, which makes for efficiency in research, generally mean the lack of that experience in the works, that appreciation of the point of view of the operative, which is so necessary for successful industrial innovation. Again, a factory superintendent, even when progressive in principle and spirit, is driven, often unconsciously, to oppose innovation. His efficiency is generally measured by his ability to produce the product and to keep down operating costs. Nothing will raise costs more surely than interference with factory routine, and since innovation of any sort interferes with routine, the operating staff cannot help being predisposed against it. Finally, there is frequently a tendency on the part of factory foremen to make an experiment fail when tried on a factory scale, which is occasioned by pure jealousy. One of our most progressive companies, and one which maintains two research laboratories, has apparently solved this problem by the addition to their organization of a staff whose business it is to develop such results of the research laboratory as seem capable of introduction in the factory operation. This leaves the laboratory free from the worry of introducing results into the works, takes the matter out of the hands of the superintendent and foreman, and leaves them to continue to devote themselves to efficiency of operation. The development staff is made up of men of sufficient training to appreciate the value of laboratory results, and at the same time with sufficient factory experience to see their practical imperfections. The logical nature of this development, when compared with the hit-or-miss methods of many organizations, commends it, and in the future it is assured wide adoption.

Synthetic Rubber.—Possibly no work is being watched with more interest than the many attempts which are being made to synthetize caoutchouc, or in popular parlance, to make artificial rubber. It has been known for a number of years that the formula for india rubber is some multiple of the expression C_5H_8. Twice the expression, or $C_{10}H_{16}$, is the formula for the material forming spirits of turpentine, and three times the expression, or $C_{15}H_{24}$, is a heavy oil found in various resins. India rub-

ber is n (C_5H_8) where n is as yet unknown. Now there is a hydrocarbon called "isoprene," which has the formula C_5H_8, and the first step in the synthesis of india rubber was taken when Harries a few years ago found that isoprene when exposed to certain conditions is converted, at least partly, into the desired product. But isoprene is extremely difficult to obtain, and at present is more expensive than is india rubber itself. The most promising method at present is to break down the constituents of oil of turpentine $C_{10}H_{16}$ into two simpler molecules of C_5H_8. If this could be done easily and cheaply the rubber problem would be solved, and much work is now being spent by some of the greatest chemical manufacturing firms of Europe along this line. There are other hydrocarbons similar to isoprene that undergo changes analogous to that by which isoprene is converted into india rubber, and it is therefore possible that ultimately we may have a number of products very similar to rubber, but differing from it in some respects. (See XXVIII, *Organic Chemistry*.)

Condensation of Dust Particles.—The principle of the well known experiment of Sir Oliver Lodge, in which he showed that a high potential discharge of electricity would dispel within a limited radius the dense fogs of London by causing the minute particles of water vapor to agglomerate and fall as rain, has within the last year received a number of technical applications with very promising results. Thus by subjecting the mist of sulphuric acid which arises from certain forms of the contact process for making this chemical, to discharges of high-potential direct-current electricity, the finely divided acid particles can be made to condense and the acid be entirely recovered. The same idea has been applied on a large scale to the removal of suspended matter from the gases evolved by lead and copper smelters, and from cement kilns and grinders. It has been suggested as a method for removing the dust from blast-furnace gas before use in gas engines, and also as a means of attacking the smoke problem of large cities. Now that the possibilities of the principle are beginning to be understood, it is believed that many technical applications will be found for it.

Artificial Fertilizers.—The largest branch of chemical industry in the United States is that engaged in the manufacture of artificial fertilizers. This is an industry which must continue to grow as the population of the country increases and as the natural fertility of the soil becomes more and more depleted. For fertilizers the chief elements or factors are sulphuric acid and phosphate rock, potash in some form, and nitrogen compounds. The South continues to furnish the phosphate rock in abundance, and there is little progress to chronicle in this branch of the industry. The supply of sulphuric acid, however, has been greatly increased by the utilization of the waste acid gases of the copper and lead smelters, particularly those in the Tennessee copper district. Before the ore can be smelted it must be subjected to a roasting operation, which throws into the atmosphere vast quantities of sulphurous acid gas, causing a nuisance in itself, and wasting many tons of valuable raw material. By converting these acid gases into sulphuric acid, as is now done at Ducktown and Copperhill, Tenn., the nuisance is eliminated and our resources conserved. Little progress has been made in the production of potash salts from our natural potash-containing rocks, and our supply of this chemical continues to be imported from Germany. Early in the year serious trade complications arose between the German government and the German producers on the one hand, and the American importers and consumers on the other, which for a time threatened the stability of the market; fortunately this difficulty has been practically settled. Our supply of nitrogen compounds continues to be increased by the establishment of more by-product coke ovens, and the consequent utilization of the ammonia thus produced. The manufacture of the relatively new nitrogen compound for fertilizer purposes, cyanamide, mentioned at length in last year's YEAR BOOK, is coming into prominence.

The plant at Niagara Falls is now producing regularly a high-grade product, and a second plant is building in the South.

Superheated Steam in Chemical Plants.—The use of superheated steam in power plants for economizing fuel has for a number of years been keenly appreciated by engineers, but it is only recently that the advantages inherent in its use in chemical industries has begun to be appreciated. One of the principal uses for steam in chemical works is to transport heat from the boiler where the heat is generated by the burning of fuel to the interior of an apparatus, such as a digestor, still, or drying oven, where it is demanded. By raising the steam to a temperature higher than that which corresponds to the boiler pressure employed, a greater number of heat units can be conveyed to a given system per unit of steam employed, and a higher temperature can be maintained at a safe working pressure. Thus in glycerine stills, asphalt refining, paper and pulp mills, sugar beet dryers, and many other industries, the introduction of the use of superheated steam has accomplished economy in both fuel and plant. The various superheaters on the market may be divided into two classes—those installed within the individual boiler setting, and those in separate settings of their own which are fired directly with fuel. The temperature of the steam in superheaters within the boiler setting is usually limited to 600° F., while in the independent type the temperature may be carried to 1,000° F.

The Yellow Phosphorus Match.—The publication of bulletin No. 86, of the United States Bureau of Labor, on "Phosphorus Poisoning in the Match Industry," promises to be the means of putting into operation a change in the method of making matches which has been demanded for many years by those who recognize the evil of our present method. Phosphorus occurs in two forms, known as yellow phosphorus, a hard, yellow, translucent mass, and red phosphorus, a dark red powder. The former is appreciably volatile, giving off vapors which are poisonous, producing a peculiar disease known by the laborers in match factories as "phossy jaw." This is a necrosis of the lower jaw, as a result of which the teeth drop out, the bone decays, and ends with the entire loss of the jaw, frequently followed by death. The red modification of phosphorus is, however, practically non-poisonous, and its use is free from the above danger. Germany has prohibited the use of yellow phosphorus in matches, since 1907, while in France, Switzerland, Denmark, and certain other countries it has been prohibited since 1906. At present there are three principal kinds of matches: first, the "safety match," containing no phosphorus, and requiring to be struck on a special surface which contains red phosphorous; second, the "strike anywhere," or parlor match, containing the objectionable yellow phosphorus; the third is a strike-anywhere match, but contains no elemental phosphorus, but instead a compound of phosphorus. There are a number of these compounds which are harmless to the match-factory operator, but they cost a little more than the common yellow phosphorus. The most successful is a compound known as phosphorus sesquisulphide, being made up of phosphorus and sulphur. A patent controlling the use of this compound was held by the Diamond Match Co., and it is a pleasure to say that, to the credit of the company, it has generously and voluntarily relinquished its rights to its use of the material and assigned the patent to the public. President Taft's recommendation of placing a prohibitive federal tax on such matches as contain the poisonous yellow phosphorus will doubtless be embodied in a law during the present session of Congress.

Portland Cement from Blast Furnace Slag.—Mention should be made of the important position now taken by blast-furnace slag as a raw material for the production of Portland cement. By this is not meant the so-called slag cement, which is but a mechanical mixture of ground slag and lime, but a real Portland cement of high quality. The modern blast furnace produces as waste two

or three hundred tons of slag daily, which has heretofore been used, if at all, as filling material, railroad ballast, etc. But this slag is capable of furnishing all of the alumina and silica, and a part of the lime for making a standard cement. It is granulated by running the molten slag directly from the furnace into tanks of water, from which it is loaded into cars by steam dredging machines. After this the slag is finely ground, mixed with the proper proportion of lime, burned to a clinker in a cement kiln, and when again ground furnishes the finished product, Portland cement.

Increasing Use of Aluminum.—One of the constant drawbacks in the use of aluminum since its first introduction has been the lack of a truly satisfactory solder. Although many compositions have been prepared both to act as the soldering alloy, and also as the flux, there is always, especially for chemical work, a weakness at the point of union. With the advent of the oxy-acetylene flame, that is, a jet flame obtained by burning acetylene gas and oxygen under pressure, it is possible to weld, or to use a technical expression, "burn" two surfaces of aluminum together, just as we have always burned lead. This produces a continuous surface of aluminum, without any joint of a brazing or soldering material, inasmuch as enough aluminum of each surface is melted together to form one continuous structure of the metal. Aluminum can now be used for chemical apparatus and many other purposes in a way which formerly was impossible.

The Chemists' Building.—An event of peculiar significance in the chemical profession was the opening, on March 17 last, of the new Chemists' Building in New York. It is located at 50-54 East 41st St., and is a handsome ten-story structure, in the French Renaissance style. The three lower floors are given over to the Chemists' Club, and include a large assembly hall, besides the luxurious rooms usually demanded by a club. The upper floors are also devoted to chemistry, and provide a splendid library room, where the library of the American Chemical Society is housed, a chemical museum, and a large number of private offices and laboratories.

PHYSICS

FREDERICK A. SAUNDERS

Viewing the year's advances in physics at close range, there are few that stand out preëminently as of commanding importance. The work done year by year takes the form of additions to foundations already laid, and these structures are usually very slowly built. A single year's addition may not in itself be large, but will sometimes raise the whole to a lasting eminence. Subject as they all are, however, to the destructive effects of critical investigation, the loftiest structures of the year may be the first to crumble.

Theories.—The relativity theory continues to supply exercise to mathematical physicists, especially abroad, and bids fair to be as useful to us as the fourth dimension, though perhaps no more practical. (See XXII, *Mathematics.*) For those who wish to see just what strange conclusions it involves, without having to wade in too deep waters, an excellent article by W. S. Franklin[1] is recommended. N. Campbell[2] writes on the "Common Sense of Relativity" with the same end in view. L. T. More[3] contributes an important article on the recent theories of electricity, in which he offers us an alternative, which will be accepted by many as more rational than the conclusions of the relativity theory. Since experiments have shown that the ratio of the charge of the electron to its mass is variable with its velocity, either charge, or mass, or both, may vary. More tries to show "that we may retain the idea of the mechanical nature and invariable inertia of matter," which ought to be aban-

doned only as a last resource, and choose the hypothesis that the charge varies with the velocity. "The charge of an electron is an unexplainable property of matter, measured by its force of electrical attraction," and there is not now any way of testing its constancy at high speeds. If we suppose the charge to decrease with increase of velocity, very slowly at first, becoming zero at the velocity of light, we are then spared from "the necessity of assuming an infinite momentum for a body moving with a finite velocity" and More is "unable to find any experimental facts more difficult to explain by this hypothesis than by any of the other hypotheses which have recently been advanced; and, on the other hand, it apparently accounts for much of the modern work in terms of the older and well-established ideas." If so, we shall certainly have cause to be grateful to Prof. More.

Terrestrial Physics.—An interesting study of the age of the earth we owe to J. Joly[4]. He has made a comparison of two methods of estimation of "geological time." The first is to determine at what rate salt is now being deposited in the ocean from the rivers of the world, and hence to calculate how long it would take to give the ocean its present supply. The best estimate is about 100 million years. The second, and more physical, method is based on the study of radioactivity. It is now established that helium and lead are each produced from the disintegration of uranium. The amount of such products in any mineral depends on the amount of uranium originally present, and the "age" of the mineral. Since the rate of disintegration is now known, a fairly good estimate can be made. The time comes out uncomfortably large, 1,400 million years being the age of the oldest minerals. No satisfactory explanation of the discrepancy is at present forthcoming.

Gravitation still remains the mystery it always has been. T. Erismann[5] has carried out an experiment to find whether the attraction of one body for another is at all affected if one of them is completely enclosed by another medium (e. g. water or mercury), with negative results. L. A. Bauer[6] has directed and carried out a valuable series of measurements of the earth's gravitational attraction at sea, on the non-magnetic ship *Carnegie*. Since the pendulum could not be used, the boiling point of water and the barometric pressure were observed, and the desired result could be calculated from these. Under the same heading it is interesting to note the development of the gyroscopic substitute for the magnetic compass, which has recently been perfected,[7] and shown itself to be a marked improvement.

Our life depends on solar heat, and the amount of heat which reaches us from the sun is a quantity of considerable importance. The "solar constant" has long been under observation by C. G. Abbot and F. E. Fowle,[8] using apparatus of great precision. The heat is measured by a portable instrument called a pyrheliometer, which they have recently improved.[9] It was taken to the top of Mt. Whitney (14,500 ft. elevation), and, contrary to expectation, no marked increase in the strength of the heat from the sun could be detected there. A variation with time has, however, been found, and may prove to be regular and important in its influence on climate. This variation is quite likely connected with the changes in sun-spot activity, and with magnetic storms on the earth, concerning which A. Schuster[10] has recently contributed an interesting discussion. The aurora is also related to these phenomena; L. Vegard[11] presents a theory to account for it based on the existence of streams of charged particles (α rays) in the upper atmosphere. C. C. Trowbridge[12] shows the connection between luminous meteor "trains" and certain phenomena in vacuum tubes, due probably to the same causes. In this case the charged particles are supposed to be produced by the excessively hot body of the meteor. (See also XXVI, *Astronomy*.) Mention should also be made of an interesting article by W. M. Thornton[13] on "thunderbolts" (ball lightning). He explains them as due to quantities of ozone in a

state of active recombination. Their observed properties are a negative charge, a density greater than air, and explosive energy; these could all be explained by this assumption.

Radioactivity.—A study of terrestrial physical phenomena leads naturally to the electrical properties of the air, and it now appears that these are somewhat influenced by the presence of radioactive products. A study of this has been made by G. C. Simpson and C. S. Wright[14] over the ocean. They found that the radioactive emanations were absent from the air at great distances from land, but began to appear whenever air that had recently been near land was reached. J. C. Sanderson[15] studied the same emanations at New Haven, and traced them back to both radium and thorium, finding them in larger quantities in underground air than above.

The constant ratio that exists between the amounts of radium and of uranium present in old minerals is important as proving the derivation of one from the other. That it is constant is shown by Ruth Pirret and F. Soddy.[16] The idea that lead is a disintegration product of uranium is supported by the work of A. Holmes.[17] B. B. Boltwood and E. Rutherford[18] have made accurate measurements of the amount of helium produced from radium, and have shown that it is always produced when there are α rays present. G. N. Antonoff[19] adds "uranium-Y" to the already long list of the elements of the uranium family, but believes it to be a "side" product, not, that is, in the direct line of descent in the family. The same may be true of actinium. H. Geiger[20] has carried technical skill to a high degree and discovered a new radioactive product which comes from the gas called "actinium emanation." The difficulty in this case is that the new product is half gone in 1/500 of a second; but the positively charged particles which it shoots out travel over a different "range" from those of the other elements present, and the new element is also electrically charged when it is formed. These two peculiarities enabled him to discover its existence. E. Rutherford and H. Geiger[21] give proof of the existence of another rapidly disappearing product from the emanation of thorium, with similar properties, half transformed in 1/7 of a second. These discoveries show that the three series of products derived from radium, actinium and thorium are quite similar, especially in view of the great probability that radium C is complex. A new nomenclature is therefore recommended to make room for the new elements. (See also XXVIII, *Inorganic and Physical Chemistry.*)

The heat emitted by certain radioactive substances has been measured by W. Duane[22] by a delicate experimental method. An emission of heat by phosphoreseing materials was sought for with the same apparatus, but without success.

The rays emitted by these substances produce ionization in gases. That produced by the positive (α) rays from polonium was studied by T. S. Taylor,[23] and evidence was obtained indicating that the work done by the projected α particle in breaking up (ionizing) a molecule of an ordinary gas depends on the nature of the molecule. Less energy is required to break up heavy molecules than light ones. E. Rutherford[24] has published an important theoretical article on the amount of the scattering of these rays by matter, and the deductions that can be drawn as to the structure of the atom. He assumes that the scattering is due to the penetration of the atom by the moving particle and to the action of the strong electric field traversed within the atom itself. The theory is being tested experimentally.

The negative (β) rays consist of particles lighter than the atom. The ionization produced by these is treated by W. Wilson.[25] The slow-moving β rays, which have received the name of δ rays, are discussed by N. Campbell.[26]. The γ rays have also received much attention, in spite of the difficulty of the experiments on them. They are believed to be of the same nature as the X-rays.

X-Rays.—The theory of W. H. Bragg that X-rays are due, not as we had supposed to pulses or shocks in the ether, but to small projected

bodies of some sort, has been gaining ground. He presented his views in a Royal Institution lecture entitled "Radio-activity as a Kinetic Theory of a Fourth State of Matter,"[27] and the theory has received support from the experiments of J. C. Chapman[28] on rays from vapors, and also from the study by Bragg and Porter[29] of the energy transformations of X-rays. C. G. Sadler[30] shows that electrons are shot out of a substance when it scatters X-rays, in which case the electrons may be the rays themselves. On the other hand, the experiments of C. G. Barkla and T. Ayres[31] tend to support the older theory. In the meantime, before the question is settled, a large amount of new and very curious information is being collected about what happens when X-rays strike metallic sheets, and these emit rays of their own. A valuable summary of these facts is presented by Barkla,[32] the main features of the discoveries being that each sort of metal emits, if it emits at all, only a special sort of ray, peculiar to itself, very homogeneous, and usually different from the exciting rays. These characteristic rays have also been studied by R. Whiddington.[33]

Conduction of Electricity Through Gases.—Probably the most important and interesting work of the year is by Prof. Sir J. J. Thomson,[34] on the nature of the particles which help to carry currents in vacuum tubes. The experiments are an extension of others previously carried out, in which charged particles shooting along a vacuum tube (usually positive rays) are subjected to simultaneous electric and magnetic forces, so arranged that the deflections of the particle produced by them are at right angles to each other. The improvement in the apparatus which led to success was the insertion of a photographic plate to record the positions of the deviated particles; for it was found that they readily made a photographic impression, even when too faint to be otherwise observed. The amounts of the two mutually perpendicular deflections were measured and gave the ratio of the charge to the mass of the particles. This has proved singularly interesting. From the values obtained, it is easy to identify the hydrogen atom, bearing one unit of positive charge and this was found to be always present in vacuum tubes, no matter what was supposed to be the gas left in the tube. The negatively charged hydrogen atom is also usually present. In a tube containing a residue of air, exhausted by a mercury pump, Thomson identified the following "carriers": the hydrogen atom with one charge, positive or negative; the hydrogen molecule with one positive charge; the nitrogen atom with either one or two positive charges; the carbon atom with one charge either positive or negative; the oxygen atom with one negative charge; the nitrogen molecule with one positive charge; the argon atom with one positive charge; and the mercury atom with either one or two positive charges. In a vacuum tube nominally containing carbon monoxide, he finds as well carbon, nitrogen, oxygen, carbon dioxide and mercury, bearing a variety of different charges. This makes so delicate a method of chemical analysis that he expresses the hope that it may serve for identifying minute quantities of radio-active substances. The existence is proved of complex groups, formed, for instance, of three atoms of helium, or six of oxygen, and under conditions where we had always supposed that such groups would be split up by the energy of the discharge. It is further proved that the moving particles are not always of the same sign, but may experience encounters which rob them of their charge, or even reverse it. No other single research has thrown so much light on what really happens when a current of electricity passes through a rarefied gas.

Interesting ideas on the same subject are furnished by Sir Oliver Lodge,[35] who shows that a circulation of gas is necessary to keep up the supply of ions for the discharge, and applies this idea to explain the operation of tubes of special form which act as "vacuum valves." G. S. Fulcher[36] considers the same ions, and attacks the question of how they emit light. He finds that the ones that are engaged in the transport of

electricity are not the ones emitting the light, and concludes that they strike inactive gas molecules with sufficient vigor to ionize them and render them luminous.

A very clever experiment has been carried out by F. W. Aston,[37] in which he uses cathode rays as indicators to test the strength of the electric field near the cathode in a discharge tube. The testing rays are produced independently in a side tube, and a fine stream of them is fired across the main tube. The deviation of this ray gives information as to the field it has traversed, which is far more trustworthy than could be obtained by the older method of inserting a testing wire in the tube, on account of the disturbance in the conditions produced by the wire itself.

Ions.—The ions produced in flames colored with alkali metal salts are shown by H. A. Wilson[38] to be the atoms of the metals themselves. The ionization produced in the neighborhood of hot platinum is found by W. Wilson[39] to be largely due to molecules of carbon monoxide occluded in the platinum, and escaping at high temperatures with a positive charge. O. W. Richardson[40] has continued a long series of important researches on these same ions, and C. D. Child[41] applies similar ideas to the study of the mechanism of the electric arc. R. A. Millikan[42] extends his brilliant work, noted a year ago, by an article in which he concludes that the ions do not (at least under the conditions of his experiments) carry more than one elementary unit of charge, a conclusion to which J. S. Townsend[43] cannot subscribe. H. Fletcher[44] examines the theory of the Brownian movements, and applies this in a corrected form to the study of ions. His results support those of Millikan as to the magnitude of the the elementary unit of electric charge. The same theory in the hands of J. Perrin,[45] and of J. Roux,[46] however, leads to somewhat different values. We must finally note the beautiful experiments of C. T. R. Wilson[47] which give us an acquaintance with individual electrons for the first time, and are likely, when fully completed, to be of immense importance. He constructed a vessel, the volume of which could suddenly be somewhat increased. If this is filled with dust-free water-saturated air, ionized by some external agent, the water condenses out (when the expansion is produced) on the ions in the form of a cloud. If, however, the ions are produced by a single atomic projectile hurled into the gas from a radioactive substance, they are all very near the straight track of this projectile, and the cloud takes the form of a fine thread of mist, if it is photographed before the ions have had time to wander away. A small source of rays was used. The α particles made straight tracks, radiating from the source. The β rays (individual electrons, here for the first time followed) also showed straight lines, with a few crossing in other directions, caused by secondary rays emitted from the walls of the vessel. Gamma rays gave fine straight threads crossing the vessel in all directions, doubtless the tracks of β particles from the walls again, the γ rays themselves leaving no trace. The ions produced by X-rays give short streaks, often curved, sometimes beaded, and aimed in every direction; evidently due to particles emitted from the atoms of the gas and traveling under difficulties on account of collisions with other molecules.

Light.—Questions of the origin of light vibrations and the nature of the particles giving them are considered by F. Horton,[48] who reaches the conclusion that line spectra are produced by the vibrations of neutral atoms at the moment of their formation from charged ions; while band spectra are due to molecules or to complexes of several molecules each. E. T. Whittaker[49] has worked out an interesting theory, showing that there is a gyroscopic, rather than electric, connection between the atoms within the molecule. A system of two atoms joined thus will give vibrations similar to those of the Balmer series of hydrogen.

The study of spectra has been greatly advanced by F. Paschen,[50] who is carrying out a long series of researches on the ultra-red emission spectra of various elements;

and by H. M. Randall,[51] working with him on the same subject; also by F. Horton,[52] who succeeded in finding much that was new in the spectrum of mercury, and by P. V. Bevan,[53] who similarly added to our knowledge of the spectra of lithium and caesium. T. Lyman[54] has extended his investigations in the extreme ultra-violet to the spectra of various gases, with interesting results. The Zeeman effect, discovered in 1897, is still furnishing a fruitful field for research; B. E. Moore[55] and H. D. Babcock[56] have contributed careful pieces of work on it. A. A. Michelson[57] writes a most interesting article on the metallic coloring in birds and insects, and finds remarkable effects, due to polarization and diffraction. The colors are in the main produced by a very thin film of a substance optically like a solid aniline dye.

In the domain of luminescence our knowledge has been considerably advanced by the work of R. W. Wood[58] on the resonance spectra of iodine, and on the curious destruction of fluorescence in iodine vapor by the presence of gases of the helium family[59]; Wood and Galt[60] have examined the fluorescent light produced in sodium vapor by cathode rays. E. L. Nichols and E. Merritt[61] continue their careful study of similar phenomena in solids and liquids, and of the influence of low temperatures upon them.

A new optical device worth mentioning is the prism with curved faces, invented by Ch. Fery,[62] which gives sharply focussed spectra without the use of any lenses, with a corresponding saving of light. E. Urbain[63] has produced a remarkable mercury arc lamp, which combines an excellent white light with great efficiency, by using a piece of tungsten as the anode and placing it very near the mercury so that it becomes intensely hot.

Two articles on visual peculiarities are worth noting. One is by Lord Rayleigh,[64] who makes careful tests of the ability of the eye to distinguish differences in color between close wave lengths in the spectrum. If fairly large patches of color are produced with a sharp line of separation between them, the eye proves to be unexpectedly sensitive, and is capable of distinguishing a difference in shade between the two sodium lines in the yellow. The second article[65] shows that visual sensations may be altered by putting the head in an alternating magnetic field, the real effect being probably due to induced currents in the optic nerve which intensify, or inhibit, a light sensation produced otherwise.

Heat.—In radiation problems, the year has given us some remarkable results by H. Rubens and R. W. Wood,[66] and H. Rubens and O. von Baeyer.[67] The range of known heat rays has been extended about three octaves (to waves 1/3 mm. long) by an ingenious use of quartz lenses, which have an abnormally high refracting power for such rays. The properties of these long waves are interesting, for instance, the fact that they pass freely through a fairly thick and quite "opaque" film of soot. C. E. Mendenhall[68] has published improvements in radiation methods of high temperature measurement, including the use of a thin wedge of electrically heated platinum foil, the inside of which radiates like a true "black body" at temperatures which are readily and correctly given by an optical pyrometer, while the outer surface (which is shown to be at the same temperature as the inner) serves as a support for small specimens whose melting points are to be determined. Much good work is being done, especially by the scientific workers in the various bureaus at Washington, toward accurate high temperature measurement. The Geophysical laboratory, under Dr. A. L. Day, has contributed papers this year on the melting points of minerals, and on the detection of small heat effects[69] at high temperatures. (See XXVII, *Mineralogy and Petrography.*) C. W. Waidner and G. W. Burgess[70] (Bureau of Standards) have made further careful measurements, testing the various temperature scales between 100° and 500° C. Mention should also be made of a careful research by H. C. Hayes[71] on errors in cooling curves and methods for avoiding these errors, with considerable improvements in experi-

mental methods. At the other end of the temperature scale comes the work of Sir James Dewar, an interesting account of which was given by him in a Royal Institution lecture[72] on Jan. 20.

Sound.—P. H. Edwards[73] has carried out a good piece of work on violins. Suspended discs (after Rayleigh) were fitted to resonators tuned to the principal (open) tones of a violin and to their harmonics. The relative intensities of these could then be quantitively measured. The hope is expressed that the best violins will show constant relative intensities among the harmonics, and, if so, any instrument can be tested by such an apparatus, and its quality made the subject of exact measurement. A. Campbell and D. W. Dye[74] report the detection, by dust figures in tubes, of inaudible "sounds" from oscillating electric circuits whose frequencies run up to the enormous figure of 900,000 per second, five octaves above the highest audible tone.

Electricity.—H. Kamerlingh Onnes[75] has discovered a conductor of practically zero resistance but, unfortunately it must be used at a temperature about —270° C. It is simply a tube of mercury, of high resistance ordinarily, but losing this property at such excessively low temperatures.

J. R. Wright[76] has made measurements on the potentials attained by an insulated plate of aluminium, illuminated by ultra-violet light, leading to the result that there is a maximum effect produced by one particular wave-length, and that the plate may rise to the very large potential of 14 volts.

Wireless Telegraphy.—Methods of producing high frequency oscillations for sending purposes have been studied by G. W. Nasmyth.[77] Success seems to have been obtained[78] (in Germany) in the production of a machine for generating continuous high-frequency oscillations, which will be a very great improvement. Sensitive detectors have been further examined by L. W. Austin,[79] of the U. S. Naval Wireless Telegraphic Laboratory, at the Bureau of Standards. The disturbances due to terrestrial electrical effects, which are often troublesome, were tested by W. H. Eccles and H. M. Airey,[80] who found that practically identical disturbances were recorded at two stations nearly 300 miles apart, at the same instant, indicating common but distant sources—possibly thunderstorms. In spite of the difficulties involved, signals have been used, transmitted from Paris,[81] over a distance of 1,000 miles for the purpose of comparing chronometers, and determining longitude; an accuracy in time determinations of one hundredth of a second is obtainable even at this distance. The present state of wireless telegraphy is presented in an interesting way by G. Marconi in a Royal Institution lecture[82] of June 2. (See also XXXII, *Electrical Engineering.*)

Scientific Bureaus.—A review of this sort would be incomplete without special mention of the work done at the various scientific research institutions in America. Not to mention the colleges, we have in this country many places of this sort, where a great mass of valuable work is being turned out every year. Chief among these is the Bureau of Standards. Some of the work done there this year has been mentioned above, and reference to the rest of it is omitted only on account of lack of space. The Geophysical laboratory, the Astrophysical laboratory of the Smithsonian Institution, the Bureau of Terrestrial Magnetism, and the laboratory of the Mt. Wilson Solar Observatory all deserve commendation. It is noteworthy that the National Electric Lamp Association has established a research laboratory at Cleveland, where work of broad scientific interest in optics is being done by Dr. E. P. Hyde and his staff. Other commercial organizations might also be mentioned for the same reason; all of which tends to show that this country is fast learning the real value of pure science.

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DARWIN, Sir G. H.—*The Tides and Kindred Phenomena of the Solar System.* (London, John Murray.)

FLEMING, J. A.—*The Propagation of Electric Currents in Telephone and Telegraph Conductors.* (London, Constable.)

KELVIN, Lord—*Mathematical and Physical Papers. Vol. V. Thermodynamics, Cosmical and Geological Physics, Molecular and Crystalline Theory, Electrodynamics.* Edited by Sir Joseph Larmor. (London, Cambridge University Press.)

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PIERCE, G. W.—*Principles of Wireless Telegraphy.* (New York, McGraw-Hill Book Co.)

SCHUSTER, A.—*The Progress of Physics During Thirty-Three Years (1875-1908).* (London, Cambridge University Press.)

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XXIX. THE ORGANIC SCIENCES

BIOLOGICAL EVOLUTION

HENRY E. CRAMPTON

The nature of the present situation in biology is well indicated by the fact that nearly all of the researches published during the past year have dealt specifically with some aspect of heredity; several are concerned also with selection and its share in evolution, but only a few discuss variation as such, or its causes. This contrast with the state of affairs only a decade ago indicates how greatly American students have come to ignore certain elements of the evolutionary process, although their concentration upon the problems of heredity has brought about substantial and gratifying advances.

Selection.—An excellent statement of our knowledge regarding the role of natural selection is given by Harris,[10] who directs attention to the necessity for renewed efforts in this field. Another paper by the same author[20] takes up the correlation between fertility and certain somatic characters in *Hibiscus*, which he finds to exist, but in too low a degree to be biologically significant. If the relation were closer, certain types of flowers would be selectively advanced, other factors being equal. By far the most important paper for several years is by Moenkhaus[36] on his extensive experiments with the fruit-fly, *Drosophila*. The author states that the closest inbreeding for many generations, a selective treatment, does not necessarily bring about any loss in size, any imperfection in form, in the rate of the reaction to light and gravity, in egg production, length of life or in the sex ratio. These results are contrary to the popular belief, as well as to that of anthropologists generally, who are led to consider the question with relation to exogamy among primitive peoples. Further, the author states that the sex ratio is variable in different strains, and that such variabilities are heritable, like color itself, and are amenable to the process of selection. He also believes that sex is not determined at the time of fertilization of the egg, and that therefore *Drosophila* differs from those forms which show indications of chromosomal direction of sex (*vide infra*). Pearl[42] also asserts that fecundity is a heritable characteristic in fowls.

Heredity and Mendelism.—Jennings[24] gives a full paper on *Paramoecium*, showing again that hereditary differences can be demonstrated in this form, and that assortative mating occurs, i. e., large individuals with large, small with small, *caudatum* with the same type, and *aurelia* with its like. Emerson[12] and East and Hayes[11] give extensive accounts of heredity in maize, which is essentially Mendelian. Bean[1] shows that among Filipinos the cross between wavy and curly hair in man presents a blend, but that the two contrasted characters segregate later, not always in strict accordance with Mendelian ratios; the male parent is prepotent, whichever character it possesses. Spillman[52] presents the facts in the case of the cow-pea, as well as a valuable review of the subject. An experiment by Kellogg[28] in double-mating silkworms gave results, he maintains, that are not in accord with the classic cases, but Castle[4] explains the discrepancy by an appeal to variable dominance. Hatai[23] formally considers the rela-

tion between blended and alternative or Mendelian inheritance, and rightly insists that the essential thing is the segregation of parental characters in later generations. Pearl[41] has a very significant paper on the effect of the personal coefficient in work on Mendelian inheritance.

Heredity and the Genotype Conception.—The analysis of heredity made by Johannsen has become more widely known through its discussion at the meeting of the American Society of Naturalists. Johannsen[26] restates his principles, defines his terms and concepts, specifies the role of selection, and insists that inheritance should be understood as meaning the appearance in parent and offspring of similar character due to identical "genes," and not a transmission of personal peculiarities from parent to offspring. A "genotype" is practically an elementary species, existing within, so to speak, the specific type; selection simply sorts out the genotypes of a species, and falsely appears to exert an effect upon heritable characteristics. Shull,[50] East,[10] and Jennings[25] support the views of Johannsen, on the basis of their own observations, while Harris[21 22] insists that the full biometric proof is not as yet at hand.

Mutation.—The origin of new forms in experimental material of *Drosophila* by mutation, and forms that breed true to their new characteristics, is announced by Morgan[38 39] and Loeb and Bancroft[33]; some of these are apparently spontaneous, while others are initiated by treatment with higher temperatures, radium emanations, and Röntgen rays. Davis[9] and Gates[18] give very interesting discussions of experimental evidence relating to *Oenothera lamarckiana*, the classic plant of De Vries's studies, and contend that this type has really originated by the hybridization of *O. biennis* and *O. grandiflora*. If so, the mutations observed by De Vries must be subjected to renewed scrutiny.

Heredity and Sex.—At present, this subject is focal in the entire area of investigation, not only because cytological results are becoming progressively coördinated with experimental findings, but also because the male or the female condition can be positively referred to *specific* chromosomes as their physical bases, which is of far greater importance than the reference of all heritable characters to the germplasm. Wilson[62] adds some important observations on the sex-chromosomes in hemiptera, and offers a valuable critical discussion[62 63] of the whole subject, including the newer knowledge relating to sex-limited characters, i. e., those which appear in only one sex but which are so coupled with the differential chromosome that they may disappear in the first hybrids, only to become evident in the next generation. Morgan[37] also gives some valuable data and discussions of this topic, and cites examples from his own results with *Drosophila*. Sturtevant[56] and Goodale[15 16] add their concrete observations to those already at hand. Tennent[59] and Pinney[44] have discovered a differential chromosome in echinoderms, while Stevens[53 54] observes them in the guinea-pig and in mosquitoes, but in the latter case there seems to be no relation to sex determination, she contends. Gerould[14] has published an interesting paper on the inheritance of polymorphism in the cabbage butterfly, and finds also that the determination of sex depends, as in *Abraxas*, upon the heterogametic character of the female parent, not the male. Guyer[19] discusses the relative values of nucleus and cytoplasm in heredity, upon the basis of enzymatic interaction between the two, which does not of course affect the validity of the established facts of sex determination.

Miss King[29 31] attacks the contention of those upholding the ancient view that germ cells from the organ of one side of an animal produce female offspring, while the germ cells of the other side become individuals of the opposite sex. By experimental evidence obtained with rats and amphibia, she shows that this view is not supported. A further result is very significant, namely, that the relative amount of water in the egg seems to have some influence in determining sex, a result which appears in the contrasted sex ratios of normally developing eggs and of

others with reduced relative volumes of water. Ordinarily males always exceed the females in number, as Miss King shows for rats,[30] and Moenkhaus for flies, although the expected numbers of each should be equal if there was no interference with the sex determinants identified as specific chromosomes. Why the excess of males should appear, remains for investigation.

Heredity and Environment.—The purely negative or eliminative effects of environment conditions stand unquestioned and unquestionable; on the other hand, the efficiency of external circumstances as originative and positive factors is doubted by all, saving only a few of the so-called neo-Lamarckian school. The sphere of activity of external agents has been greatly restricted by the results in the field discussed above, but direct examination is also essential. MacDougal,[34] in his presidential address delivered at Ithaca, gives an admirable statement of the recently established cases of alterations in somatic form induced by environmental agencies. He contends that such agencies have exerted direct effects upon the germ cells of the altered individuals and that no proof has been brought forward to show that a purely somatic character has subsequently been introduced into the series of germ-plasmic characteristics. Sumner[57] restates his interpretation of his results with mice, reported last year. Payne[40] has bred the fruit-fly for 69 generations in the dark, and when the light reactions of the last born flies were tested, they proved to be substantially the same as in the original stock—a negative result of much interest in connection with the problems of cave faunas. Shull[51] gives an extensive and excellent account of his experiments on the rotifer *Hydatina*, to determine the part played by external factors in the change from the parthenogenetic to the sexual modes of reproduction. He finds that changed temperature conditions do act, but not directly as such.

By far the most significant results are given by Castle and Phillips.[2] The authors transplanted the ovaries from black guinea pigs with known gametic constitution into the body of white animals, also of known gametic types, after excising the original organs. In one such experiment, six offspring of the white mother, mated with a black male, were black; no influence of the maternal soma manifested itself. The facts are unquestioned, and the results speak for themselves; their importance cannot be overemphasized or overstated. Guthrie[17] contends that in his similar experiments with fowls he has succeeded in demonstrating an effect by the maternal soma, but his own account, like that of Davenport,[7] shows that regeneration of the partly extirpated original gonad took place, so that eggs produced subsequent to the operation were by no means necessarily formed by the engrafted organ. Castle[3] discusses the facts and interpretations in the case, in reply to criticisms by Guthrie of his and Phillips' work.

In a larger way, Shelford[47 48 49] gives some exceedingly interesting facts as to the relations of organisms to their environmental situations. He shows that the fishes of streams are arranged in definite orders, from mouths to sources, and that the series of a small stream is like that of the upper part of a larger stream. It is more surprising to learn that in ponds, there is, so to speak, a stratified arrangement of species, and that the strata of newer-formed ponds are duplicates of some of the series found in an older body of water. These papers point two definite morals: that a great deal remains to be discovered in the field of general natural history in the best sense of the phrase, and that too little attention is directed to field studies in natural history.

The time-honored discussion of the value of color and coloration is enlivened by the strong attack made by Roosevelt[45] upon the teachings of Thayer. The latter author[60 61] restates his position in two papers of the year. Pearl[43] gives some results bearing on the problem as to the relative concealing merits of barred and self-colored plumage in fowls exposed to the attacks of natural enemies, and finds, in opposition to Davenport's contention, that no definite advan-

tage accrues to either type of coloration. Sumner[38] has secured some remarkably interesting results with flat fishes, finding that these forms tend to simulate the texture of the substrata upon which they are placed. This is true for black and white patterned surfaces.

Heredity and Genetics.—As definite knowledge of the laws of biological inheritance increases, it will become progressively available for the betterment of organic breeds serving human interests, and for the betterment of the human species itself. Already one essential principle has been established, namely that nature is more important than nurture—that heredity provides the characters which are then subjected to environmental influences and modifications, if such can be produced. Kellicott[27] has presented the case for genetics in compact and readable form, in a volume based upon a series of general addresses. Davenport,[8] Stevens[55] and Marshall[35] also point out how known biological laws can be employed socially and agriculturally. A special paper by Rosanoff[46] cites additional evidence that human phenomena are in essential accord with other zoölogical facts, in so far as insanity seems to be inherited in Mendelian ways.

Finally, mention may be made of two volumes of a general nature, Castle[5] has published a book which gives an excellent outline of the whole subject of heredity as it stands to-day; it is particularly welcome as a basis for further investigation, especially with reference to the determination of sex. Crampton[6] has presented an outline of the field of evolution in general, and of human evolution in particular; and he endeavors to show that evolution as an all-inclusive process is continuous, inasmuch as mental, social, and ethical phenomena follow the same course of historic development as the structures of organic forms.

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ZOOLOGY

HENRY E. CRAMPTON *

The methods of experimentation have come to be largely employed by American investigators for the study of development and for the analysis of causal morphology in general. There has been no reduction in the number of special papers in descriptive anatomy and in special physiology, but zoölogy has long since become an experimental science, and at present purely descriptive papers are relatively detailed and few. The *American Journal of Anatomy*, the *American Journal of Physiology*, the *Proceedings of the National Museum*, and the *Reports* and *Bulletins* of the Smithsonian Institution are the principal repositories for such papers. The volume of the *Transactions* of the American Fisheries Society for 1911 is worthy of special mention in this connection, for it gives a list of papers published from 1870 to 1909 by the members of the society, and it contains besides many important contributions to the economic zoölogy of invertebrates and vertebrates.

Taxonomy.—Among the more important contributions to classification are the catalogue of spiders, by Petrunkewitch,[52] the memoir on the Solenogasters of the Pacific by Heath,[26] and the memoir on the shore fishes of the Pacific by Kendall and Goldsborough.[32] Kofoid and Michener[33] have enlarged the literature of the dinoflagellate protozoa. Brues[5] has described a new *Peripatus* from Grenada, of special interest on account of the fact that the first specimens of the genus were taken in St. Vincent, near Grenada.

Morphology.—Donaldson[19] discusses the seasonal change in the weight of the nervous system of the frog in relation to the total weight, and refers it to a failure of the nervous system to keep pace with the general growth of the whole body. The research is interesting also on account of its use of statistical methods. Parker[50] describes the physiology of locomotion in gasteropods, a puzzling subject of inquiry. Parker[51] also describes the olfactory reactions of the killifish, and shows that this form possesses a sense of smell akin to that of terrestrial forms, although visual sensation assists the organism to find its food, so that it differs from the catfish as described by Herrick and others. Sheldon[57] obtains similar results in the case of the dogfish. Finally Strong[62] deals with the same sense in pigeons, though his paper is mainly anatomical. He believes that an olfactory sense also exists in these forms.

Embryology.—Goodale[23] describes the embryonic history of a salamander, *Spelerpes*, showing among other things that there is no constant relation between the early cleavage planes of the egg and the principal planes of the embryo; in this respect this type differs from the frogs that have been so largely employed for experimental studies on promorphology and induced abnormal development. He also states that the blastopore shifts during closure, and that no concrescence takes place like that of the frog. Smith[59] describes the nests and breeding habits of *Necturus*. Ritter and Johnson[54] have made a close statistical study of the growth and differentiation of the chain of *Cyclosalpa*, bringing this whorled type into relation with other forms of chains. Drew[20] gives an extensive and well illustrated paper on the preliminary embryonic processes of copulation, egg laying and fertilization in the squid, *Loligo*, while An-

* The section "Entomology" is contributed by John A. Grossbeck.

drews[2] deals with the male organs for sperm transfer in the crayfish. Curtis[18] describes the results of his studies on the history of *Scolex polymorphus*, which he believes on the basis of experimental evidence to be the larval precursor of *Phoreiobothrium triloculatum*. Hargitt[24] continues his valuable researches upon coelenterates, and finds reason to doubt the validity of Weismann's accounts of the early differentiation and peculiar behavior of the germ cells in these forms. Allen[1] supplements his earlier observations upon the origin of the sex-cells of the turtle by others on the history in ganoid fishes. The most important point is that the germ cells arise from the *endoderm* and later migrate inwards to their definitive mesodermal positions. Loeb[41] has dealt in great detail with the physiological processes concerned in ovulation, and finds that the ovarian cycle is independent of pregnancy and other physiological states.

Experimental Zoology. — Transplantation experiments with ovarian tissues have yielded certain results that are highly interesting in connection with the experiments of Castle and Phillips, discussed in the article on "Evolution" *supra*. Drew[21] implanted pieces of the ovary of the scallop in the adductor muscle of that form, and found that a fibroblast cyst formed about the graft, whose cells later became converted into ciliated epithelium, a seemingly specific effect of the whole operation. Stockard[61] performed similar operations on salamanders, and discovered that the behavior of the transplanted ovarian tissues differed with the specific character of the organ into which they were introduced. Loeb[39] and Loeb and Addison[40] also performed transplantation experiments with birds and mammals, and found that the physiological interactions are extraordinarily complex. Yet none of the foregoing results affect the principle for which Castle contends, when he asserts that from the time of its fertilization, the egg and embryo of the mammal are, from the standpoint of heredity, qualitatively foreign bodies.

Conklin[16] has repeated his brilliant studies upon ascidians, employing *Phallusia*, and he finds that different oöplasmic substances are recognizable as in other types; he finds also that isolated blastomeres develop partially, that is, into corresponding moieties of a complete embryo, as he himself, Chabry, and Crampton had demonstrated for other ascidians. Hegner[27] reports some exceedingly significant results with insect eggs. A portion of an egg with induced defects develops into a corresponding part of an embryo; when the early formed germ cell masses are destroyed, they are never replaced from other tissues. Spooner[60] has experimented with the centrifuge upon eggs of *Arbacia* and *Cyclops*, with excellent results. Although the oil, protoplasm and yolk can be shifted from their normal situations, perfect embryos can develop. A cytological observation of interest is that the astral rays are not fibers, while the spindle fibers are real. Differentiation seems to be accomplished through the agency of a substance unaffected by centrifuging, which is a substratum, as it were, in which yolk and other substances are distributed. Bardeen[3] describes the abnormalities resulting from the treatment of amphibian sex cells by X-rays.

The extent of self-differentiating ability on the part of embryonic tissues has been examined by Shorey,[58] Burrows,[7] and Hooker.[29] The first two authors have dealt with the embryonic nerve tissue, Shorey using *Necturus* cells placed in muscle extract, and Burrows employing fibrin clots as culture media for cells taken from chick embryos. They agree that neuroblast tissue thus placed will differentiate and produce fibers, although the period of operation is a factor of the result. Hooker deals with embryonic muscle of the frog, which is able to develop so that it is capable of responding to stimulation, although nerve fibers and connections are entirely absent. The myogenic theory of the heart beat is thus supported.

Many papers deal with the regenerative processes in diverse organisms. Calkins[8] gives some important results of his studies on *Uronychia*,

showing that regenerative power is greatest at the time of division, that an operation delays the time of division, and that a substance is formed by the nucleus which facilitates the process of repair; he therefore supports the views of De Vries and Hertwig, according to which the nucleus, during its resting phase, gives off a substance, probably of the nature of an enzyme, which normally induces division, but which facilitates regeneration after an operation. Equally important are the observations by the same author[9] upon *Paramoecium*. He gives the evidence that there is a division zone similar to that demonstrated by Child (*vide infra*), and that cutting the animal a short distance away from this zone will often lead to the formation of monsters, sometimes with as many as fourteen mouths, by progressive division of the nucleus and partial regeneration without complete section of the cytoplasm. Wilson[63] describes the behavior of dissociated cells of hydroids, *Alcyonaria* and *Asterias*, and discusses his findings in relation to the phenomena of regeneration in sponges, upon which he has worked extensively. Morgulis[45 46 47] has carried on careful and detailed investigations upon the factors that affect the nature and rapidity of the regenerative processes in the annelid *Podarke*, and finds, among other results, that smaller pieces of this form undergo more rapid reorganization than larger pieces. This result is important in connection with the contention first made by Zeleny, that operating upon a regenerating animal causes it to repair itself more rapidly than would be the case if the subsequent operation were not performed. Morgulis[48] also gives an interesting account of the relation between nucleus and cytoplasm in the tissues of salamanders that are regenerating. Inanition so changes the relation in question that the nucleus is relatively larger, and consequently the process of repair is hastened.

By far the most careful and thorough analysis of regeneration is given by Child[10 11 12 13 14] in a remarkable series of papers that are too full to admit of detailed summary. His general point is that regeneration is a regulatory process quite as primal as the development from an egg and the maintenance of the equilibrium of the final adult form. Interference with the last mentioned form of regulation induces the processes of regenerative regulation. The details of the phenomena in the case of Planarians are fully presented, as well as significant observations upon senescence. As regards this last, Child holds that it is, in physiological terms, a decrease in the rate of metabolism, and an accumulation in cells of by-products which act as obstacles to metabolism.

In the field of animal behavior, biologically treated, are papers by Herms[28] on sarcophagid flies, by McGinnis[43] on *Branchipus* and its reactions to light, heat, and gravity, and by Laurens[34] on the reactions of amphibians to light. In the first mentioned paper the highly adaptive value of the mode of reaction is particularly emphasized.

Cytology.—Many of the researches considered in foregoing sections present observations of a cytological nature, and this is especially true in the case of the subject of heredity and sex determination (article "Evolution"). A few other papers remain to be noticed. Lillie[35] gives a rigid physico-chemical analysis of the cortical changes of the egg of *Nereis*, in normal and in partial fertilization. Longley[42] describes maturation and ovulation in the cat. Montgomery[44] gives an account of the structure and behavior of the various elements of the cell in the spermatogenesis of *Euschistus*. Richards[53] deals with the puzzling case of the cestode, *Moniezia*, and shows that mitosis is the method of division during the critical stages in the development of the female gonads.

Loeb[38] and Lillie [36 37] deal with the actions of various salts upon the process of cell division; in brief, the main result is that while calcium, potassium, and sodium are necessary elements of the environmental complex of dividing cells, they are in no sense nutritive, but only protective and act in a physico-chemical manner. Woodruff[64] shows that the excretion products of *Paramoecium* are auto-toxic, and that therefore the ani-

mals living in larger volumes of water will be healthier and will reproduce more rapidly than in the case of more closely confined individuals. Woodruff and Baitsell[65] show that this same animal can be kept almost indefinitely without deterioration in a constant culture medium, and is not necessarily dependent upon a "varied" diet.

Entomology.*—The subject of entomology has received its full share of attention by Americans during the year. Most of the contributions have appeared in periodical publications or in the bulletins and reports of the United States Department of Agriculture and of the several state experiment stations. (See XXII, *Economic Entomology.*) By far the majority of the papers are purely systematic and economic. Of the former nature is Rohwer's[66] paper on the genotypes (types of the genera) of the saw flies, one which well illustrates the tendency manifested by entomologists to secure a stable nomenclature. This is the second of its kind to appear recently, that of Coquillett[17] on the genotypes of American diptera having been published late in 1910. Harris'[25] list of North American Cicindelidae, while purporting to be merely an enumeration of the species belonging to this family in the Harris Collection, is practically a complete list of the forms occurring in America north of Honduras, as few of the species from this area are unrepresented in the collection of the author. This list has an additional value as a work on the distribution of the several species and varieties; long series of localities are given for most of the species, and a few names are proposed for local races. A paper essentially systematic in character but also having an important bearing on economic entomology is a contribution by Hopkins[30] on the bark-weevils of the genus *Pissodes*. These beetles are representative of a class of enemies of pine, spruce, and fir trees, of which comparatively little has been known hitherto, as shown by the fact that out of the 30 species recognized as occurring in North America, 23 are new to science. The purely systematic portion of the work is prefaced by a detailed account of the external anatomy of the adult, the larva, and the pupa.

While in America the parasitic Hymenoptera have received much attention, chiefly at the hands of the late Wm. H. Ashmead, whose massive volumes stand as monuments to the memory of that illustrious author, yet much remains to be done in the way of treating the genera and subfamilies in a comprehensive manner in connection with a description of the life histories of the species, and their relation to man and agriculture. Gahan[22] describes the known American forms of the sub-family Aphidiinae and gives synoptic tables for the ready identification of all species and genera; he also relates what is known of the life histories and habits of the species, adding the results of his own observations and rearings.

In dealing with a given group of animals it is necessary to know at the outset what has been accomplished in the study of that group; hence catalogs and bibliographies are always welcome additions to literature. Moulton's[49] work on the Thysanoptera is a complete catalogue of the 108 species of this group known to inhabit North America, while it describes also ten new species from that region.

Parts I and II (under one cover) of what promises to be an invaluable work for students of the entomology of the northeastern states have appeared as a *Bulletin* of the State Geological and Natural History Survey of Connecticut, by Britton and Walden.[4] This work is far in advance of the usual lists of local insects, for it contains an elementary treatise on entomology, adapted to the non-technical reader, and the means for identifying the listed insects in the form of analytical tables of the families, genera and species and as well in the way of brief concise descriptions of these groups. Insect habits are by no means neglected, and where the species are of economic importance, remedial measures are prescribed for their control or eradication.

* This section is contributed by John A. Grossbeck.

A most noteworthy publication dealing with insects in relation to health is Howard's[51] book on the house fly. It is only in the last dozen years or so that this common form has come to be regarded as an exceedingly dangerous insect, not only as an agent in the carriage of the germs of typhoid fever, but also as a disseminator of the causal organisms of many intestinal diseases, as well as of tuberculosis, smallpox, ophthalmia, plague, etc. The awakening has resulted in much investigation and experimentation; and the fruits of such studies have been widely scattered in various periodicals, bulletins and reports. Dr. Howard has brought together in one comprehensive treatise all that is known of the house fly in relation to disease, and has added the results of his own personal investigation. Chapters on the life history and habits of this insect, its natural enemies, and remedial and preventive measures, complete this important and highly useful work.

The morphology and physiology of insects have been treated to a greater or less extent in connection with studies in systematic entomology. A noteworthy contribution dealing expressly with these topics is by Ritter[55] on the flying apparatus of the blowfly, *Calliphora vomitoria*. The external parts of the thorax of this insect are described in great detail, as are the muscles operating the wings. The constituents of the wing-joints also receive particular attention, and are divided into quite distinct morphological groups; the whole is an exoskeletal structure, thus differing fundamentally from the articular structures of vertebrates.

A brief, though interesting, paper by Burgess[6] on the locomotion of the larva of *Calosoma sycophanta* shows that newly hatched larvae are able to travel for 70 hours without food or drink, and may cover in that time a distance of 9,058 feet, or 1.71 miles. The result is important in proving that young insects may survive for a considerable interval of time in the field without food, and that they have sufficient vitality to make a prolonged and thorough search for food.

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BOTANY

MORPHOLOGY

JOHN M. COULTER

It is becoming increasingly difficult to disentangle plant morphology from paleobotany or from the experimental work being done in evolution and heredity. In fact, plant morphology has become a study of the evolution of plants, as revealed by their structure and history, and during the last few years the most important progress in morphology has come from the uncovering of paleobotanical material. Exclusion from plant morphology of both paleobotany and scientific plant breeding eliminates the most striking factors in its progress. Restricting the statement to living material, and including no experimental work, the most

significant American work in plant morphology during 1911 may be stated as follows:

Eusporangiatae.—The most notable volume of this period is Campbell's (Stanford) *The Eusporangiatae* (issued August, 1911), a publication of the Carnegie Institution. One of the most puzzling groups of *pteridophytes* ("fern plants") is the *Ophioglossaceae* ("adder's tongue," "moonwort," etc.). Formerly it was included among the ferns, for the plants resemble ferns; then it was thought to be more closely related to the club-mosses; and for some time it has constituted a group by itself. The *Marattiaceae* ("ringless ferns") are true ferns, and share with the *Ophioglossaceae* a method of sporangium formation called "eusporangiate," which differs from the sporangium formation of the other ferns. The volume on *Eusporangiatae* brings together long continued studies of these groups by Campbell, and not only establishes the fact that they are really related (and hence *Ophioglossaceae* are ferns), but also concludes that the whole fern series has been derived from forms resembling the simpler species of *Ophioglossum*. The relationship of these two groups has also been established on the side of their vascular anatomy by Miss Charles (Chicago), in her study of the sporelings of *Marattia*, and she has also shown their relationship to certain fern forms of the Paleozoic. It has thus been finally established, in 1911, that the *Ophioglossaceae*, for nearly 20 years a major group of uncertain affinities, are after all ferns closely related to the *Marattiaceae*, and possibly the nearest living representatives of the forms that gave rise to our present fern flora.

Cycads. — Chamberlain (Chicago) has continued his studies of cycads by contributing two papers on *Dioon*, a genus peculiar to Mexico. One paper contains the most complete account of fertilization and of the development of the embryo yet obtained from a cycad. The other paper gives the first complete account of the structure of the adult cycad trunk, and corrects several current notions. For example, one of the most persistent statements in reference to the cycads has been that they are characterized by a thin vascular cylinder, as contrasted with the thick cylinders of the conifers. It is now found that in one species of *Dioon*, at least, the vascular cylinder is thick, and the growth rings are evident.

Gymnosperms.—Knowledge of the gymnosperms has been still further extended by papers from Jeffrey's laboratory (Harvard), dealing with the vascular anatomy of various forms. The vascular structure of living and fossil forms of gymnosperms is now known sufficiently to establish with fair certainty the history of the group, and the relative ages of existing forms. An interesting reversal of previous notions is that the pines, instead of being the most modern of conifers, are the most ancient representatives of the group, a distinction once thought to belong to the araucarians, of the Southern Hemisphere.

Angiosperms.—The chief contribution of the year to a knowledge of the morphology of angiosperms has been a series of papers beginning to appear from Jeffrey's (Harvard) laboratory and dealing with their vascular anatomy. Heretofore the reproductive structures of angiosperms have been made the basis of all conclusions in reference to their relationships and relative antiquity, for there is no such extensive history as in the case of gymnosperms. Having established certain principles of interpretation in connection with a study of the vascular anatomy of gymnosperms, these principles are now being applied to the vascular anatomy of angiosperms. The group is so large and the work referred to is so recent that no general conclusions have been reached, or can be reached for some time, but there is no reason to doubt that this method of attack will result in a knowledge of the history and relationships of angiosperms such as has not been possible heretofore.

Fungi.—The life histories of fungi continue to be a fascinating subject for investigation, and papers chiefly from the laboratories of Harper (Columbia) and Atkinson (Cornell)

uncover new facts. There is at least a three-fold attraction in the study of fungi: (1) they include most important disease-producing forms; (2) they present some very important cytological problems; and (3) in most of them the question of sexuality remains to be answered.

PHYSIOLOGY AND ECOLOGY

B. M. Duggar

Plant Physiology.—Judging from the number of plant physiological articles contributed by American students to botanical and chemical journals at home and abroad, it is apparent that the past year has witnessed a substantial growth in this science. The progress in the work has been natural, without the revolutionary effects incident to startling results. There has been manifest, as during the previous year, an increasing appreciation of the importance of utilizing to the fullest extent all the perfections of technique and instrumentation which physics and chemistry offer. There has been mutual influence between the advances in colloidal chemistry and cell physiology; the new edition of Höber's *Physical Chemistry of the Cell and of Tissues* meets a welcome here as cordial as in Germany; investigations with ultra-violet light and with methods of light measurement promise to be of considerable importance; and the electrical relations of plants are receiving renewed attention. Likewise the strides which have been made in scientific agriculture have developed facts and uncovered problems of much importance in pure physiology, and the value of close contact with the applied work is obvious.

There is no American society or other organization exclusively for plant physiologists, nor a journal to bring together their work. For this reason the literature is unusually scattered, and adequate review work difficult. It is noteworthy that more than one-third of the papers presented before the section of Biological Chemistry, American Chemical Society, at the preceding winter and summer meetings have been essentially plant physiological. The key note of the expressions before the Botanical Society of America at its symposium on "Plant Pathology" was the importance of fundamental physiological preparation and study. The similar importance of such study should be urged on the part of persons preparing to attack some of the problems of plant-life through the agronomic, horticultural, soils, and bacteriological aspects. While careful training in the applied fields is most important, it may be forecasted that colleges preparing such men must begin to devote more attention to the fundamental plant-life subjects. In France the relation of the teaching of plant physiology to agriculture has been emphasized during the year by LeClerc du Sablon in his extensive recent handbook, *Traite de Physiologie Végétale et Agricole;* while in this country my text is intended to be at least an introduction to the subject in its plant production relations (*Plant Physiology with Special Reference to Plant Production*).

A record of the special topics receiving attention during the year would be too extensive to be included here; but it is particularly noticeable that among the fields much cultivated are absorption (penetrability), oxidation and reduction phenomena, respiration and fermentation (including enzyme action), nitrogen fixation, transpiration, and the relations to light, temperature, and water-supply. (See XXVIII, *Agricultural Chemistry,* and *Biological Chemistry.*)

Ecology.—The most extensive and conspicuous publication of the year in the field of ecology is Harshberger's *Phytogeographic Survey of North America.* This is the first serious effort to bring together the information furnished by physiography, climatology, geology, and the various branches of botany into a comprehensive survey of the vegetation of North America. Its comprehensiveness makes it important, and it will serve as a basis upon which subsequently more accurate and detailed regional studies may be based—studies which should express clearly the degree of attainment which has been

reached in this country in both experimental ecology and floristics. At least one important regional "plant life" study has also appeared, this being a conservative *Ecological Plant Geography of Maryland* "treated in its general descriptive phase." This application of ecological work is one of a type much to be desired in developing wholesome interest in the facts of plant life with respect to climatic and other physical factors of the environment. The promised ecological text by Cowles is not yet off the press.

Detailed ecological investigations of limited areas have continued as prominent as in the past few years. For some time the vegetation of peat bogs and a study of the conditions, past and present, of peat formation have received much attention in many parts of the world. It is gratifying to note that the important work of Davis in Maine, Michigan, and elsewhere is stimulating similar work in other parts of this country. Especially worthy of mention is Harper's work in Florida. The features of this study which deserve special mention are briefly the relation of peat formation to immature topography; and the differentiation of wet habitats into various types dependent upon lime content, movement or stagnation of the water, rise and fall of level, and many general indications respecting peat-forming plants. The study of peat is of economic interest, and no general topic of recent times is richer in the suggestion of special problems for careful analytical study.

A critical study of the physical environment continues to receive in this country more exact study, perhaps, than anywhere else in the world. This is emphasized during the past year by contributions to the subject from botanists in practically all sections of the country. In time much assistance should be rendered by the U. S. Weather Bureau.

TAXONOMY, PATHOLOGY, AND ECONOMIC BOTANY

GEORGE T. MOORE

Progress during the past year has not been marked by any spectacular discovery in any particular field but rather by a steady advance in all branches of the subject. As evidenced by published work, the activity of botanists in almost every line has increased. Botany, including as it does taxonomy, morphology (with anatomy), pathology and physiology, all of which in zoölogy have become practically independent sciences—to say nothing of the various minor divisions of the subject—has become so complex that any systematic review of even the most recent and important work in the entire field is impossible.

Taxonomy.—Rather more than the usual number of monographs on the seed plants have appeared and such journals as the *Botanical Gazette, Bull. Torrey Botanical Club, Rhodora, Muhlenbergia, Bryologist, Mycologia,* as well as the contributions from the U. S. National Herbarium and the proceedings of various Academies of Science have presented during the year numerous systematic accounts of groups both of the seed and seedless plants. The Connecticut Botanical Society has prepared a catalogue of the flowering plants and ferns of that state, and local studies of everything from fungi to trees have appeared, of which perhaps Jepson's *Silva of California* is the most notable. Parts of the *North American Flora* (New York Botanical Garden) which have appeared, cover four families in the *Geraniales* and the orders *Hypocreales* and *Fimetariales* of the fungi. A contribution toward a knowledge of the Philippine forests and an exploitation of their products appeared in the Bull. 10 of the Philippine Bureau of Forestry. The first part is devoted to forest types and products and the second to the principal forest trees. Other papers on Philippine botany have appeared in the *Philippine Journal of Science.*

Pathology.—The economic importance of the knowledge of a cause and cure of plant diseases furnishes a stimulus, particularly to the Department of Agriculture and the State Experiment Stations, to devote much attention to this branch of botany. There have consequently appeared the usual number of bulletins from these sources treating of

the more important funguous diseases in this country. (See XXII, *Diseases of Plants.*)

While not appearing in 1911, the recent appearance in this country of the first books attempting to give a comprehensive treatment of the diseases of plants should be mentioned. *Fungous Diseases of Plants* by B. M. Duggar (Cornell University) discusses the life history and pathological effect of the parasite upon its host and indicates the most approved methods of prevention or control of most of the common diseases found in this country. Stevens and Hall (North Carolina Coll. of A. and M. A.) in *Diseases of Economic Plants* write especially for those who wish to be able to recognize and treat a plant disease without having to study the particular cause.

A new journal, *Phytopathology*, the official organ of the American Phytopathological Society, appeared in Feb., 1911, and has continued as a bimonthly.

Economic and Applied Botany.—The application of pure botany to various agricultural practices is receiving more and more attention. Work on the bacteriology of the soil, plant nutrition, the symbiotic relationship between plants (see especially Coville, Bu. Plant Industry Bull. 193, "Experiments in Blueberry Culture"), the cause and remedy for timber rot, the effect of noxious fumes on vegetation and similar problems has progressed far enough to be in some cases practically applied with good prospects of being of still further economic value. (See XXII, *Agricultural Chemistry.*) The systematic introduction of new plants or varieties adapted to particular regions into this country by the Department of Agriculture furnishes a good example of the means by which new plant industries are being established.

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PALEONTOLOGY

CHARLES R. EASTMAN*

In the realm of biological investigation the comparatively new science of paleontology, or the study of the ancient plant and animal life of the globe, has been marked by great activity during recent years, both in this country and abroad, and its advance has been fruitful in important and far-reaching conclusions.

American Paleontological Society.—A signal event in the history of the science in this country was the founding of an American Paleontological Society, a vigorous and active body now in its third year, whose membership includes practically all workers in paleozoology and paleobotany. One of the announced aims of the Society which it is hoped may soon be realized is the establishment of a journal devoted exclusively to paleontological themes. The Society holds an annual meeting in conjunction with that of the Geological Society of America, with which it is closely affiliated.

PALEOZOOLOGY

Invertebrates.—Without doubt the most remarkable discoveries in invertebrate paleontology during the year are the new finds reported by Dr. C. D. Walcott from the Middle Cambrian of British Columbia, a horizon and locality which yields magnificently preserved impressions of fossil remains. The more interesting elements of the fauna consist of Annelids, Holothurians, Medusae,

* That portion of this article which deals with the *Reptilia* has been kindly contributed by Dr. W. J. Holland, Director of the Carnegie Museum, Pittsburgh; and notes regarding discoveries of fossil mammals have been furnished by him and by Dr. W. D. Matthew, of the American Museum of Natural History, New York.

and beautiful trilobites showing appendages of various kinds, as well as a peculiar new order of Crustaceans named *Limulava*, markedly different from Eurypterids. With regard to the new group of Annelids described by Dr. Walcott from this horizon (Publication No. 2014 of the Smithsonian Institution), it is remarked by the author just named that this occurrence "opens up a new point of view on the development of the *Annulata*. The fact that from one very limited locality there have been collected eleven genera belonging to widely separated families points clearly to the conclusion that the fundamental characters of all the classes had been developed prior to Middle Cambrian time." This conclusion is significant as suggesting an equally long period of development for other divisions of the animal kingdom whose early geological history is still involved in obscurity.

Notable progress has been made during the year in the study of nearly all groups of invertebrates. The Echinoderms as usual have received a large share of attention, and have been made the subject of elaborate memoirs by Messrs. Frank Springer and R. T. Jackson, not to mention a number of minor papers by various authors. Questions as to distribution of animal life in former geological epochs continue to command profound interest. Professor Schuchert's great work *Paleogeography of North America* has prepared the way for detailed investigations of similar nature. An example is furnished by Dr. E. O. Ulrich's important thesis entitled *Revision of the Paleozoic Systems*. This work, which embodies the results of long continued studies covering an extremely wide range, places the Paleozoic stratigraphy of our continent upon a new foundation. It recognizes as basal facts the oscillating character and shallowness of the ever changing continental seas, and emphasizes the importance of diastrophic criteria for the larger time divisions.

Vertebrates.—Turning to the vertebrate phylum, a rich output of contributions to the literature of fossil fishes, amphibians, reptiles, and higher vertebrates is to be recorded for the past year. In Europe, the veteran paleichthyologist Dr. Traquair has published a valuable memoir on the Wealden fishes of Belgium. The fish fauna of the Alpine Trias has been reinvestigated by Prof. De Alessandri, of Milan, that of the Paris Basin by Prof. F. Priem, and a number of interesting African fossil fishes have been described by Dr. Stromer of Munich. In this country President Jordan has made known a new Eocene fish fauna from Brazil, and separate bulletins are devoted to the fish and reptilian remains of the so-called Newark beds of the New England region by the Connecticut Geological and Natural History Survey. In this connection may be mentioned a discovery of much local interest, namely the finding and description by Miss Talbot of a Connecticut Valley dinosaur, a small compsognathoid form entirely new to this region. To Dr. O. P. Hay is due the credit of bringing to light a unique specimen of *Edestus*, which dispels much of the mystery that has hitherto enveloped the singular dental structures known under this name.

Amphibia.—The class of Amphibia has received attention from Drs. Williston, Case, and Moodie in this country, and from Baron von Huene and others abroad. From the Permian of Texas and New Mexico, S. W. Williston has described, within the past two years, six new families of amphibians and reptiles, named by him as follows: *Trematopsidae*, *Dissorophidae*, *Caseidae*, *Limnoscelidae*, *Araeoscelidae* and *Seymouriidae*. Of these the first five are represented by new genera and species, and all are based upon nearly complete skeletons. The same author has in addition described practically the entire anatomy of two other forms, *Varanosaurus* and *Captorhinus*, and has published excellent restorations of the best known genera. In view of the many new morphological facts disclosed by the various genera of Permian reptiles it has become necessary to modify in material respects our conceptions of the early land vertebrates. Students should consult especially Prof. Williston's volume *American Permian Vertebrates*,

published during the year in book form, and Prof. Case's memoirs on amphibians and cotylosaurians, published by the Carnegie Institution of Washington.

Dinosaurs.—Another group of reptiles that has enlisted the activity of numerous investigators, both in this country and abroad, is the order of dinosaurs. During the past year the attention of scientists has been called to the investigations which have been made in German East Africa by the expedition sent out under the leadership of Dr. Janensch from the Berlin Museum, resulting in the discovery of the remains of many large sauropodous dinosaurs. No adequate account of the material which has been acquired has yet been published. These African remains, however, apparently represent creatures of colossal size, some of which probably belong to the family of the *Brachiosauridae*, established by Prof. Riggs upon certain skeletal parts found by him in Colorado several years ago.

The remarkable discoveries made by Barnum Brown of the remains of *Tyrannosaurus* and other Cretaceous dinosaurs are worthy of special mention. The unearthing by Charles Sternberg of two mummified specimens of ornithopod dinosaurs in the Cretaceous of Wyoming has contributed a vast amount of information, not merely as to the osteology, but also as to the dermal covering of these creatures, which in spite of their great size are now known to have had a scaly epidermis, the ossicles of which were comparatively small and arranged much in the same way as in some of the recent reptiles.

During the year the extensive excavations begun in 1909 in the Jurassic beds of northeastern Utah by the Carnegie Museum have been continued. These operations have revealed a number of singularly complete skeletons of sauropod dinosaurs, lying in more or less undisturbed condition in the rock. In association with these Jurassic sauropods were found the remains of carnivorous dinosaurs, as well as some fragments of Jurassic mammalia, the whole constituting a most remarkable discovery.

Mammals.—In the division of mammalian paleontology recent progress of our knowledge has been ably summarized and splendidly illustrated by Prof. Henry Fairfield Osborn in his *Age of Mammals*, the publication of which during the year constitutes a notable enrichment of the literature of this subject. A few special topics under this head may be briefly touched upon as follows: First, the finding of fossil mammalian remains in the island of Cuba and new discoveries in Mexico mark the beginning of more extensive explorations in Central and South America. In the next place should be mentioned the results of work carried on during the last few years at two or three fruitful localities in Nebraska and other western states. Recent excavations in Sioux County, Neb., conducted principally by the Carnegie and American Museums have resulted in the disclosure of an extensive mammalian fauna, concerning which a number of valuable papers have been published in the *Annals* of the Carnegie Museum and elsewhere. One of the remarkable discoveries in these Miocene beds was that of an aberrant cameloid of diminutive size, named *Stenomylus*, of which not less than 40 nearly complete skeletons have up to the present time been obtained. Important papers on this genus have recently been published by Prof. F. B. Loomis of Amherst College and O. A. Peterson. At the now famous locality known as Agate Springs quarry in Sioux County, Neb., remains of a genus of pair-horned rhinoceroses known as *Diceratherium* have been found in great abundance. Another highly important discovery was that of a complete skeleton of *Dinohyus*, upon which Mr. Peterson has based a monographic revision of the *Entelodontidae*. A still more interesting discovery is that of a complete skeleton of *Moropus elatus*, which has been assembled and mounted and is now on exhibition in the Carnegie Museum. A monograph dealing with the osteology of this form and of Chalicotheres generally is announced by the director of that institution to be nearly ready for publication.

The extensive explorations made by

Earl Douglass in the Eocene of Utah have resulted in the discovery of a large amount of material. Mr. Riggs of the Field Columbian Museum has also made excavations in the same general region, and has likewise recovered a great deal of valuable and interesting material illustrating the fauna of the Uinta deposits. An excellent representation of *Uintatherium* is included in the new material brought to light. Mr. Douglass has recently published a preliminary paper giving descriptions of some new forms apparently ancestral to the Titanotheres.

Considerable interest attaches to the remarkable discoveries made in the vicinity of Los Angeles, Cal., at Rancho La Brea, of the remains of Pleistocene mammals, as well as of numerous avian species, which occur embedded in an asphalt deposit. The material from this locality has been in part investigated by Dr. J. C. Merriam of the University of California. Mention should be made also of the important geological and paleontological discoveries made by the same author in the Miocene of Virgin Valley and Thousand Creek, northwestern Nevada.

PALEOBOTANY

A summary of the progress of our knowledge during the past year or two in paleontology would not be complete without some account of the advance made in paleobotany, or that branch of the science which is devoted to fossil plants. The substance of the following paragraphs has been kindly placed at the disposal of the present reviewer by Dr. O. E. Jennings.

Comparative Anatomy.—Although little has been accomplished in America as to the comparative anatomy of the Paleozoic plants, owing to the extreme scarcity of petrified material suitable for sectioning for microscopic study, Coulter and Land (*Botanical Gazette*, June, 1911) have worked out one such specimen—a *Lepidostrobus* from the coal-measures of Warren County, Iowa. As regards anatomical studies of post-Paleozoic plants, however, a very high place must be accorded to the work of several American paleobotanists.

Cycads.—The advance of knowledge regarding the so-called "fossil cycads," the *Bennettitales*, has been very great during the last decade, due mainly to the work of G. R. Wieland of Yale University upon the abundant specimens from the Mesozoic of various places in the United States and Mexico. Materially supplementing the monumental Publication of the Carnegie Institution No. 34, 1906, along this line there have appeared more recently articles in the *Botanical Gazette*, Dec., 1909, and in the *American Journal of Science*, Aug., 1911.

Gymnosperms.—Second to none has been the work of E. C. Jeffrey of Harvard University upon the comparative anatomy and systematic relationships of the fossil gymnosperms. Jeffrey's genus *Prepinus* represents one of the important archaic forms of the *Coniferales* and his researches into the comparative anatomy of various members of this order have demonstrated quite clearly the primitive character of the Paleozoic *Abietineae*, the modern representatives of which constitute the prevailing type of conifers of the northern hemisphere, and that the prevailing type of conifers of the southern hemisphere to-day (the *Araucarineae*) is probably derivative from the *Abietineae*. Cretaceous representatives of *Sequoia* have been shown to be of Araucarian affinity. Recent articles of Jeffrey are to be found in *Proceedings Boston Society Natural History*, July, 1910, and *Botanical Gazette*, Dec., 1910. In *Proceedings American Academy of Arts and Sciences*, Dec., 1910, Jeffrey shows that certain supposed algal coals (cannel coals or bog-head coals) have been formed by the deposition of spores rather than by the accumulation of remains of algae. The joint work of Hollick and Jeffrey which appeared as a Memoir of the New York Botanical Garden, May, 1909, contributed much to a knowledge of the anatomy of certain Cretaceous conifers and threw considerable light upon the relationships of the suborders *Abietineae* and *Araucarineae*.

Cretaceous Floras.—In the Amer-

ican Cretaceous floras the earlier work of Newberry, Dawson, Lesquereux, Fontaine, etc., so ably supplemented by Ward, has been continued in recent years principally by F. H. Knowlton of the U. S. Geological Survey, working mainly in the West, by E. W. Berry of Johns Hopkins University, working mainly in the central and southern portion of the Atlantic coastal plain, and by Arthur Hollick of the New York Botanical Garden, working mainly in the central and northern portions of the Atlantic coastal plain, so that the American Cretaceous floras are the best known floras of this period in the world and they bid fair to continue so for a long time. Various recent articles referring to this later work will be found among the publications of the United States Geological Survey, the State Geological Surveys of Maryland and New Jersey, and the Torrey Botanical Club.

Tertiary and Pleistocene Floras.—The Tertiary flora of America is also relatively very well known. The earlier work of Lesquereux and Newberry is now being ably carried along by Berry and by Hollick in the eastern states; and in Colorado by T. D. A. Cockerell, of the University of Colorado, a number of papers by this author having appeared recently in various periodicals. Various contributions relating to the floras of the Pleistocene have been made in recent years by Hollick, Berry, and others, mainly in the northeastern states.

Bibliography.—The last two years (1909-1911) have been notable in paleobotany owing to the appearance of four books on general paleobotany by English authors. Scott's *Studies in Fossil Botany*, revised (1909), and Seward's *Fossil Plants*, Volume II (1910), are designed for the use of more advanced students of paleobotany, while Scott's *Evolution of Plants* (1911) and Stopes's *Ancient Plants* (1910) are designed for less advanced students and for the general public. No such works have appeared in America in recent years, but, with reference to the gymnosperms, Penhallow's *Manual of the North American Gymnosperms* (1907) contains much relating to fossil species, and Coulter and Chamberlain's *Morphology of the Gymnosperms* (1910) treats the fossil species in a very full and able manner. J. M. Coulter in Part I of the *Textbook of Botany* (1910) under the heading of "Morphology" has blended together for the use of advanced students in colleges and universities the subjects of paleobotany and botany into a treatise far in advance of anything of the sort yet brought out either in the Old World or New.

ANTHROPOLOGY, ETHNOLOGY, AND PREHISTORIC ARCHEOLOGY

George Grant MacCurdy

Anthropology, ethnology, and prehistoric archeology are all currents of one and the same stream. As this stream flows largely through institutional channels, the record for the year can best be studied by noting the progress in the departments fostering this triple science. In this way the credit is shared alike by men and the institutions they serve. On the other hand the science of man has not lacked in support from those who from choice or force of circumstances have worked out important problems alone or through private initiative. To such sources we owe some of the most notable archeological publications of the past year, and these will be considered before taking up the institutions seriatim.

Peru.—In *The Incas of Peru* (New York, E. P. Dutton & Co.), Sir Clements R. Markham gives some of the choicest fruits of more than fifty years' study and travel in which he has endeavored to master all the original authorities on Inca history and civilization. The result is a series of essays of absorbing interest to the general reader and at the same time indispensable to the serious historical student. Among sources recently brought to light he mentions

Nueva Coronica y Buen Gobierno, by Don Felipe Huaman Poma de Ayala. This quarto of 1,179 pages was found in the Royal Library at Copenhagen by Dr. Pietschmann, who will soon publish what Sir Clements calls "the most remarkable as well as the most interesting production of native genius that has come down to our time."

A short chapter is devoted to the megalithic age; the famous monolithic sculptured doorway at Tiahuanacu, the cyclopean building in the Calle del Triunfo in Cuzco, the stone of Chavin de Huantar, attract the author's attention but do not detain him long. He believes in the great antiquity of the megalithic civilization which probably held sway over the Andean regions from an unknown distance south of Tucuman to Chachapoyas, with Tiahuanacu as the center. The author discusses in turn the rise of the Incas, their empire, religion, calendar, festivals, language and literature, condition of the people, the coast valleys, the Chimu, the Chincha confederacy, and finally the cataclysm. The list of kings given in the appendix is from Montesinos, who it seems obtained his information from Blas Valera without giving the latter credit. The appendix also includes extensive notes on the names Quichua and Aymara, architecture and arts of the Incas, the Inca drama of Ollantay, and Inca folklore.

Ecuador.—While much attention has been paid to Peru on the south and Mexico and Central America on the north, the field between has received scant notice. Thanks to Mr. George G. Heye, who financed the expeditions, and to Prof. Marshall H. Saville, who directed them, the archeological world now has two splendid volumes by Prof. Saville: *Contributions to South American Archeology, Antiquities of Manabi, Ecuador* (New York, Irving Press), the second volume appearing in 1910. Prof. Saville distinguishes nine centers of ancient culture, five in Ecuador and four in Colombia, these of course in addition to the intrusive Inca culture. The two volumes, as the title indicates, are confined to one Ecuadorean province. In Manabi, an arid region extending from the Equator to Guayaquil, the author finds a civilization but little affected by Incasic influence. Stone seats form a special feature of Manabian archeology. They are found in great numbers, but only on Cerro de Hojas and several neighboring hills within an area not more than twenty miles in diameter. So far as Cerro de Hojas is concerned the seats were found only in the rooms of the ruined houses or *corrales*. The author enumerates about a dozen types of stone seats; he believes them to have been ceremonial. Of perhaps even greater significance are the stone basreliefs found principally on Cerro Jaboncillo. The author divides these sculptured slabs into nine groups. The first five groups represent human female figures; in the sixth and seventh the sex is doubtful; the eighth is a complex problematic stylistic life form, and the ninth is purely diagrammatic. Under ceramics considerable space is given to figurines, human heads, whistles, and spindle whorls. The latter are decorated with incised patterns, but do not compare in workmanship with the finer whorls from Colombia and the valley of Mexico. Although hunting for golden treasure was not the object of the expedition, the author admits being disappointed in the number and value of metal objects found. Each volume has an appendix with long extracts from early Spanish authors, which with the comprehensive bibliography in the first volume brings the reader into close touch with the anthropology of Ecuador.

The Mayas.—*The Numeration, Calendar, and Astronomical Knowledge of the Mayas*, a large volume issued from the University Press, Cambridge, in 1910, another excellent example of private initiative, is generously printed for the use of the Peabody Museum of Harvard. C. P. Bowditch, the author, was already well known to Maya scholars. According to Landa, the Mayas divided their year in two ways; in one case 12 months of 30 days each, in the other 18 months of 20 days each, both methods requiring an addition of 5 days 6 hours. Beginning with

the Maya days, their names and glyphs, the author takes up in turn: the numerals (usually red) attached to the days; the black numerals in the codices, carrying the numeration through the fourth term (*katun, tun, unial,* and *kin*) and showing various signs for certain numbers; the months, their names, signs, and the numbers attached to them; the Maya year; the fifty-two year period, or calendar round, and finally the longer numeration of the codices, leading to the cycle and grand cycle. He also goes thoroughly into a comparative study of the glyphs and explains two methods employed by the Mayas for fixing a date besides that of the long count.

Mississippi River.—Clarence B. Moore has long been an active worker in the field of American archeology, devoting himself largely to the southern states. He has given his valuable collections to the Philadelphia Academy of Natural Sciences and other institutions. The results of his explorations have been published from time to time in the *Journal* of the Academy. Early in Jan., 1911, he resumed field work in northeastern Arkansas, bordering the Mississippi river, which had been begun in the preceding fall, on the famous aboriginal site at Pecan Point. Field work was continued from his steamer constructed especially for this kind of work, going down stream and investigating various aboriginal sites in Arkansas, Mississippi, and Louisiana. A complete report of his work along the Mississippi river was published in the *Journal of the Academy of Natural Sciences* of Philadelphia in Oct., 1911, with maps, colored plates and illustrations in the text, under the title *Some Aboriginal Sites on Mississippi River.* Work will be resumed in the fall of 1911, along the Red river, in Louisiana and in Arkansas.

Albany: New York State Museum.—The anthropological section of the Museum concerns itself exclusively with the archeology and ethnology of the New York aborigines. Arthur C. Parker is the State Archeologist. During the year, 12 complete life casts of representative Iroquois, both male and female, have been made for the series of ethnological groups. The total to be made is about 40, of which number 30 have been completed. Three backgrounds, portraying panoramic views of special interest in Iroquois County have been painted by D. C. Lithgow. The ethnological groups will portray six features of Iroquois life—Hunting, posed by Seneca models; Warfare, posed by Mohawk models; Council, posed by Onondaga models; Ceremony, posed by Cayuga models; Industries, posed by Oneida models; Agriculture and food preparation, posed by Seneca models. The work of securing proper costumes and accessories for these figures has been undertaken with almost complete success and has consumed much of the work of the year. A series of monographs describing the life activities represented by the groups is in course of preparation, *Iroquois Uses of Maize and other Food Plants* having already appeared. Excavations have been made in certain village and burial sites in Livingston County, resulting in the discovery of stone-lined and covered graves, dating probably from the first quarter of the 17th century. Many unique brass ornaments were found, showing the early uses of the metal for ornament. Interesting forms of bone and shell implements were discovered. During March the fire in the State Capitol destroyed more than 9,000 archeological and ethnological specimens. In the library section a number of valuable manuscripts were burned. New quarters for the anthropological section are being provided in the new Educational building.

Andover: Phillips Academy.—The Department of American Archeology has begun an archeological survey of New England. The Curator, Warren K. Moorehead, reports the discovery two miles from Andover, of an ancient earthwork over 3,400 feet in length. The Steinbrook collection, comprising 8,000 objects found on the Mandan village sites, North Dakota, was purchased by Prof. Edward Williams, Jr., and presented to the Department. Mr. Moorehead's *The Stone Age in North America,* in two large volumes, was published in Dec., 1910 (Houghton Mifflin Co.). The

author acknowledges his special indebtedness to Dr. Charles Peabody, Honorary Curator of the Department, for suggestions, advice, and financial support. The material is described according to class or type rather than by locality. Use is made of the classification prepared for the American Anthropological Association by its Committee on Archeological Nomenclature. While the work has many shortcomings, much may also be said in its favor. It cannot fail to increase the general interest in North American archeology and be of great service to the large class of amateur collectors, their *vade mecum* in fact. Much may also be said in favor of the general excellence of the illustrations, especially the plates. This is offset in a measure, however, by the reproduction of the card-board arrangement of specimens so common in amateur collections. Relatively too much space is given to the consideration of objects in stone, about twelve times as much as is accorded to ceramics, for instance.

Berkeley: University of California.—The Department of Anthropology, in the immediate charge of Assistant Prof. A. L. Kroeber, has explored shell mounds on the shores of San Francisco Bay, within the city limits of San Francisco and at San Mateo. The work was conducted by N. C. Nelson. The evidence obtained affords further proof of the slow and uniform development of the civilization more or less common to that entire region, and merging into that of the modern Indian inhabitants of central California. The base of the shell deposits is everywhere below the present mean water level, the difference amounting in some cases to several feet. This fact taken in connection with the large size of the mounds, and other corroborative evidence leads Mr. Nelson to conclude that some of these deposits were begun 3,000 or more years ago. Cave exploration in the lower Sierra Nevada has yielded important results. The cave at Auburn contains animal bones that are unquestionably Quaternary. The human remains and artifacts in this cave appear to be more recent than the fossilized animal bones, but in some places the two deposits are only a few feet apart, so that further excavation may yet reveal human remains of geological antiquity.

Recent University of California Publications in American Archeology and Ethnology are:

Vol. 8, No. 6. "The Religious Practices of Diegueño Indians." T. T. Waterman, 1910.
Vol. 9, No. 2. "The Chumash and Costanoan Languages." A. L. Kroeber, 1910.
Vol. 9, No. 3. "The Languages of the Coast of California North of San Francisco." A. L. Kroeber, 1911.
Vol. 10, No. 1. "Phonetic Constituents of the Native Languages of California." A. L. Kroeber, 1911.

Brooklyn: Museum of the Brooklyn Institute of Arts and Sciences.—Stewart Culin, Curator of the Department of Ethnology, has installed exhibits in two new halls of the Museum, one devoted to Japan and the other to the Indians of the Northwest Coast. The Japanese collections were secured for the most part by Mr. Culin in the east during the two preceding years, and consist chiefly of costumes. The Northwest Coast hall has been decorated with large pictures in oil representing the Haida villages at Masset. The collections are now in course of arrangement. Mr. Culin has also done some field work among various Indian tribes, making extensive collections.

Buenos Aires: Museum of the National University.—Prof. Juan B. Ambrosetti, the Director, and Dr. Salvado Debendetti have just finished the archeological exploration of the pre-Columbian city of Pukara de Tilcara; also those in western Catamarca and the southern part of Entre Rios. The Museum publications include a paper on Peruvian iconography by Professor Ambrosetti, on the prehistoric cemetery of Baradero by Dr. Debendetti, and the parietal bone among the Calchaqui by Señorita J. A. Dillenius. The joint exploration of Dr. Florentino Ameghino, Director of the National Museum, and Prof. Ambrosetti has resulted in the discovery of two fossil human crania and artifacts in the undisturbed Pampean deposits of an ancient lake

bed, near Banderalo, Province of Buenos Aires.

Buffalo: Buffalo Society of Natural Sciences.—Henry R. Howland, Superintendent, reports that the field work has included a thorough investigation of two of the important Seneca villages which were destroyed by De Nonville in 1687, namely, Gandagora and Gandougarae. The specimens taken from these sites are extremely interesting and fill several cases. A *Bulletin* giving the results of this work is in press.

Cambridge: The Peabody Museum of Harvard University.—The Peabody Museum had a party in the field in Ohio under B. A. Merwin, last summer, and the exploration of the ancient cemetery at Madisonville, begun by Prof. Putnam and Dr. Metz in 1881, has been completed. The larger part of the land on which was located this prehistoric cemetery was bequeathed to the Peabody Museum by Miss Phoebe Ferris. This land will now be made into a public park. The research in relation to the antiquity of man in America has been continued in the Delaware Valley. The report on 22 years of research in this region by Mr. Volk, under the direction of Prof. Putnam, has been prepared by Mr. Volk, and by the aid of Dr. Charles Peabody has just been published as Vol. V of the Papers of the Museum (see below). S. J. Guernsey has conducted archeological explorations in New Brunswick. Dr. G. P. Howe conducted a brief expedition to Tuloom, Yucatan. Since his return he has prepared a report on the interesting results. Dr. A. M. Tozzer and Clarence L. Hay made a trip to Mexico in the interests of the Museum. R. E. Merwin was in charge of an expedition to Guatemala in the winter of 1910-11. He excavated at the ruined site of Holmul, which was discovered by the Peabody Museum Expedition of the previous year. Mr. Merwin returns this winter to continue his researches in Guatemala. Dr. Charles Peabody has been in Europe for several months making arrangements for filling certain gaps in the European archeological collections of the Museum. A. V. Kidder spent the past winter in Santa Fé, New Mexico, continuing his studies on the Pueblo pottery. Assistant Prof. R. B. Dixon was granted leave of absence during the last half of the year 1910-11 in order to undertake the work of preparing the report on the Indian Tribes of the U. S. Census Bureau at Washington, D. C. Prof. Putnam, the Honorary Curator, still directs the activities of the Museum.

Publications of the Peabody Museum are:

Papers:

Vol. IV, No. 3. "The Animal Figures in the Maya Codices." A. M. Tozzer and G. M. Allen, 1910.

Vol. V. "The Archæology of the Delaware Valley." Ernest Volk, 1911.

Vol. VI, No. 1. "Commentary on the Maya-Tzental Codex Perez." William E. Gates, 1910.

Memoirs:

Vol. IV, No. 3. "Explorations in the Department of Peten, Guatemala, and Adjacent Regions." Teobert Maler, 1910.

Vol. V, No. 1. "Explorations in the Department of Peten, Guatemala: Tikal." Teobert Maler, 1911.

Vol. V, No. 2. "Prehistoric Ruins of Tikal, Guatemala" (under same cover as No. 1). A. M. Tozzer, 1911.

Chicago: Field Museum of Natural History.—Dr. George A. Dorsey, Curator of the Anthropological Department, is on leave of absence, preparing a series of articles on ethnology. Dr. Berthold Laufer has carried on for three years ethnological investigations in Sikkim and eastern Thibet, and archeological researches in China. He has secured records of two old Tibetan dialects, which throw new light on the development of Indo-Chinese languages, and material relating to the rites, mythology, art, and history of Lamaism. The Chinese collections are said to illustrate all phases of culture history. Since 1909, Dr. A. B. Lewis has been in New Guinea, New Britain, and the Solomon Islands. The data he has gathered will add much to our knowledge of far-eastern anthropology. The collection gathered on F. C. Cole's last trip to the Philippine Islands numbers 2,500 pieces and is representative of every phase in the daily life of the tribes visited. Charles Owen is among the Hopi collecting further data and will remain in the South-

west during the winter in order to carry on archeological investigations.

Columbus: The Ohio State Archæological and Historical Society.—W. C. Mills, the Curator, has completely excavated the large Overly Mound. This proved to be culturally entirely different from the Seip Mound, which is only about one hundred yards distant, and just outside the great earthworks of the Seip group. Thus the prediction of Mr. Mills that these mounds outside the earthworks would differ from those within has come true.

Los Angeles: The Southwest Society.—This society, a branch of the Archæological Institute of America, maintains a rapidly growing museum, and through its Secretary, C. F. Lummis, and its Curator, Hector Alliot, is doing an important educational work along archeological and ethnological lines.

Mexico.—The International School of American Archeology and Ethnology was inaugurated in the City of Mexico on January 20, 1911. The founding patrons of the school are the government of Mexico, the government of Prussia, Columbia University, and Harvard University. The director of the school for 1911 was Prof. Eduard Seler of the University of Berlin. The director for 1912 is Prof. Franz Boas of Columbia University. At the Museo Nacional, Señor Robelo succeeds Señor Garcia as director. Señor Francisco M. Rodriguez has been appointed inspector-general and conservator of archeological monuments of the Republic, succeeding Señor Batres. Señor Paul Henning has just discovered a new center of ancient civilization in the district of Juquila, State of Oaxaca. Among the specimens brought to light are 40 large sculptured stone slabs.

Minneapolis: University of Minnesota.—Prof. Albert E. Jenks of the Department of Sociology and Anthropology has just completed an ethnic census of Minneapolis, having collected data from about 40,000 families. From these are to be gathered facts on amalgamation, fecundity, etc., as well as material for an ethnic map of the city. Dr. Jenks has also completed a study of negro-white miscegenation in Minneapolis and St. Paul.

New Haven: Peabody Museum of Yale University.—The chief work by Assistant Prof. George Grant MacCurdy, entitled *A Study of Chiriquian Antiquities*, appeared in 1911 as Vol. III, Connecticut Academy of Arts and Sciences. It is the result of an intensive study of the unparalleled collection of Chiriquian antiquities belonging to Yale University, supplemented by public and private collections in both America and Europe. Chiriquian ceramic decoration is dominated by motives derived from life forms or elements thereof. Motives derived from the armadillo are everywhere plastic, presumably because they originated in a class of ware that depended on sculpture and relief for ornament. When transfered to painted ware, their plastic origin still asserted itself. The development of a whole series of motives derived from the armadillo is first noted in this work. Motives derived from the alligator are always executed in color instead of relief. They characterize a group of ware that depends on color for ornament, and when carried over into other groups they appear consistently as painted forms, but with an individuality somewhat altered by the technique of the group of ware in question. The motive derived from the profile of the alligator, or either of its derivatives, the spine motive and the scale-group motive, would have made a convenient hieroglyph in a system of writing, but there is no evidence to prove that it was used as such. The motive derived from the dorsal view of the alligator is common not only to the alligator ware, but is also frequently met with in the lost color group.

As a vehicle of mythologic and artistic expression the gold images of Chiriqui vie with the splendid series of pottery. The majority are composite in character, described by earlier writers as monsters. In his endeavor to unravel the apparent tangle of mixed attributes, the author believes he has identified a number of important Chiriquian deities: the *alligator-god*, the *jaguar-god*, the *parrot-god*, and the *crab-*

god. With due allowance for the influences radiating from the Aztec and Maya civilization on the north and the Inca and Chibcha on the south, the results of the present study point to forces from within rather than without, as being the chief factors in the development of Chiriquian culture, which contains many elements of fundamental importance to a complete history of primitive art. Dr. MacCurdy is also author of the article "Chiriqui" in *Encyclopaedia of Religion and Ethics*, Vol. III, 1911; and "An Aztec Calendar Stone in Yale University Museum," *American Anthropologist*, Oct.-Dec., 1910.

Assistant Profs. Hiram Bingham and Ellsworth Huntington, both of Yale University, have been on archeological missions during the year. Prof. Bingham has been in Peru since July. Prof. Huntington has returned from Arizona and New Mexico with important data bearing on the climatic conditions under which the ancient Pueblo culture developed.

New York: American Museum of Natural History.—Dr. Clark Wissler, Curator of the Department of Anthropology, spent part of the summer among the Dakota Indians of the Pine Ridge Reservation, giving special attention to military and other societies.

Dr. P. E. Goddard, visited the Cree and Chipewyan Indians of western Canada, during June and July. Among the Cree he made a new and important ethnological collection of about 200 specimens, including many ceremonial articles and many specimens made of buffalo hide. He also observed the Sun Dance of these Indians, a ceremony so far not described. Later he spent two weeks among the Chipewyan Indians, investigating their language because of its relationship to the Apache and other languages of the Southwest, of which he has made special study. The new collection will be installed in the Plains Hall.

Dr. Robert H. Lowie spent the summer among the Crow, Hidatsa, Mandan, and Dakota Indians, continuing his systematic work of previous years. His special subjects of investigation were military and other societies, the Sun Dance, and medicine bundles. Among the Hidatsa, Dr. Lowie was assisted by Rev. Gilbert L. Wilson, of Minneapolis, Minn.

Alanson Skinner spent July and August among the Menomini Indians of Wisconsin. He secured a collection containing a large number of sacred objects, several war bundles and medicine bags worked with porcupine quills. The technique of some of this quill work is new and of considerable interest. The Menomini collections which are now fairly complete will be installed in the New Eastern Woodlands Hall.

Dr. J. R. Walker, United States Indian Physician, of Pine Ridge Reservation, S. D., has been a voluntary contributor to the Department of Anthropology for several years. He is especially interested in the mythology and ceremonies of the Dakota Indians, among whom he has lived for 13 years. During the past year he gathered some 400 pages of manuscript written by Indians who have learned to write their own language in the Rigg's alphabet. These manuscripts contain unusual material upon the most complex and sacred of Indian conceptions.

V. Stefansson has discovered a strange people in Victoria Land, north of Cape Bexley, that resemble Scandinavian or North European peasants more than they do the Eskimo or other American aborigines. Stefansson suggests that they may represent an earlier, purer type of Eskimo than had been known hitherto; or that there may have been a direct admixture of European blood. He mentions two or three ways by which this admixture might have taken place. These Victoria Landers may be the mixed descendants of the Icelandic (Norse-Teutonic) colonists who disappeared from Greenland in the 15th century; or of survivors of Sir John Franklin's expedition that was lost near the east coast of Victoria Land in the forties of the last century.

Publications of the Department of Anthropology are:

Anthropological Papers:

Vol. V, Part II. "Contribution to the Anthropology of Central and Smith

Sound Eskimo." Ales Hrdlicka, 1910.
Vol. VI, Part I. "The Archæology of the Yakima Valley." Harlan I. Smith, 1910.
Vol. VI, Part II. "The Prehistoric Ethnology of a Kentucky Site." Harlan I. Smith, 1910.
Vol. VII, Part I. "The Social Life of the Blackfoot Indians." Clark Wissler, 1911.

Ottawa.—An anthropological department has recently been established in connection with the Geological Survey of Canada. Dr. Edward Sapir is in charge of the Division of Ethnology, and Harlan I. Smith that of Archaeology, Dr. Sapir has collected material on the language, mythology and ethnology of the Nootka Indians of the west coast of Vancouver Island. C. M. Barbeau of the staff is studying the ethnology of the Huron-Wyandots. Work in other regions is being advanced by the coöperation of outside ethnologists. Dr. A. A. Goldenweiser of Columbia University was authorized in the summer of 1911, to investigate the social organization of the Iroquois Indians in Grand River Reserve. W. H. Mechling, formerly of the Indian Census Bureau at Washington, undertook a more general study of the Micmacs and Malecites of New Brunswick. Dr. Cyrus MacMillan, of McGill University, Montreal, was charged with the ethnologic research of the Micmacs of Nova Scotia, Cape Breton Island, and Prince Edward Island, chief stress being laid on folklore and religion. In connection with all of the ethnologic field work undertaken for the Geological Survey of Canada, specimens have been procured with a view to making the present collections of the museum more complete.

Since June, 1911, Harlan I. Smith has been organizing the Archeological Survey of the Dominion, and preparing the national collections for exhibition in the Victoria Memorial Museum at Ottawa. In the endeavor to cover all parts of the country, Mr. Smith has enlisted the support of the Royal Northwest Mounted Police, whose patrols take them into all parts of Western Canada; the Indian agents are also to be employed in a similar way. The spirit of coöperation is being developed between the Provincial museums and the Dominion museum in order that there may be no duplication of work. The national collections of archeology have been divided into five groups as follows: Pacific coast, plateau region, plains, eastern woodlands, and Arctic. A guide book has been written for the collections from the plateau country of British Columbia, and the text of a similar guide for the Pacific coast is nearly finished.

Philadelphia: Department of Anthropology, University of Pennsylvania.—Assistant Prof. George B. Gordon, head of the Department and director of the University Museum, reports that field work by graduate students was conducted among the Indians in Maine and among the Indians in Virginia. Other investigations in the field were carried on by Dr. Frank G. Speck among the Penobscot Indians in Maine, among the Hurons at Lorette and among the Montagnais at Lake St. John, northern Quebec. Dr. Speck concluded his monograph on the *Ceremonial Songs of the Creek and Yuchi Indians* and his work has been published by the University Museum. The activities in the Museum have consisted up to the present time in the field work of M. Raymond Harrington, who conducted the work of the George G. Heye Expedition among the Indians of the West. The collections made by Mr. Harrington embrace a large quantity of general ethnological material and are remarkable for upward of 100 sacred bundles which he obtained. The Museum has collected about 300 songs of eastern and northern Indians. During the summer of 1911, Miss Gerda Sebbelov lived among the Osage Indians, studying their social organization, secret societies and decorative art. Wilson D. Wallis studied the ethnology of the Micmac Indians in New Brunswick and Nova Scotia; and W. C. Orchard made a study of Siouxan house construction for a series of models which are being prepared under his direction in the Museum.

During the early months of 1911 a native of Dahomey, on the west

coast of Africa, was engaged by the Museum to relate what he knew of the social and religious usages of his people. The notes which were thus obtained form a valuable record of West African ethnology. From the same source was obtained a large collection of native songs recorded on the phonograph. From countries other than America, the most important acquisitions of the Museum during the winter of 1910-1911 have been an extensive collection of old ethnological specimens from Polynesia and Melanesia bought from a collector in England. The Egyptian expeditions have been brought to a close and the results of the excavations in the Soudan have been assembled in the Museum and four volumes of publications thereon have been issued. A collection of several hundred fragments of papyri, inscribed with Arabic, Demotic, Greek and Peleveh has been purchased in Cairo and added to the collection in the Museum. In the Babylonian series of publications, one volume has been published dealing with Hymns and Prayers from ancient Sumerian texts found on tablets in the Museum. (See also XXXV, *Semitic Philology.*)

Pittsburgh: Carnegie Museum.—No successor to Professor C. V. Hartman has yet been appointed; so that nothing has been done during the past year except to care for the collections.

Santa Fé.—The School of American Archeology was founded by an act of the Council of the Archaeological Institute of America in 1907. Through an arrangement with the legislature of New Mexico it has a home in the historic "Palace of the Governors," where a museum is being developed. The results of investigations by the director and the staff appear in a series called *Papers of the School of American Archaeology,* twenty numbers of which have already been issued. Dr. E. L. Hewett is the Director. The field work for 1911 included: the second expedition to the ancient Maya city of Quirigua, Guatemala; an expedition to the Colorado Basin to continue the study of the Yaman tribes; one to southern Utah; and one to the Rio Grande Valley. A summer session of the school was held in Santa Fé and at the ruins of Pajarito Park near by. The library of the late Prof. Franz Nikalaus Finck of the University of Berlin, including books in some 50 different languages, has been purchased for the school.

Toronto: New Museum, University of Toronto.—Dr. Henry Montgomery continued his work of excavating the "Serpent" Mound and other mounds in the township of Otonabee, County of Peterboro, Ont. In the "Serpent" Mound he found 40 additional human skeletons, making a total of nearly 80 skeletons in the one mound. These had been placed together in an extended and horizontal position upon a bed of charcoal, and covered by numerous stones, some of which were of great size. Dr. Montgomery also explored other localities in Otonabee and in the townships of Douro, Smith, Dummer and other parts of Peterboro County, and collected prehistoric artifacts of stone, copper and pottery. Two burial mounds were found during the past year upon the right bank of the Otonabee River near Clear Lake. These yielded skeletons and stone and bone objects. Altogether 16 mounds in Ontario were examined within the year.

Washington: Smithsonian Institution, Bureau of American Ethnology and U. S. National Museum.—Some of the most notable publications of the past year have appeared as Bulletins of the Bureau of American Ethnology, now in charge of F. W. Hodge. These are:

Bulletin 30 (Part 2, N-2), *Handbook of American Indians North of Mexico.* Edited by Frederick Webb Hodge, 1910. Indispensable to students of American anthropology.

Bulletin 37. *Antiquities of Central and Southeastern Missouri.* Gerard Fowke. 1910.

Bulletin 40. *Handbook of American Indian Languages,* Part 1. Edited by Franz Boas. Including illustrative sketches by Roland B. Dixon, P. E. Goddard, William Jones, Truman Michelson, John R. Swanton and William Thalbitzer. The sketches cover: Athapascan (Hupa,) Tlingit, Haida, Tsimshian, Kwakiutl, Chinook, Mai-

du, Algonquian (Fox), Siouxan (Dakota), and Eskimo.

Bulletin 43. *Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico.* John R. Swanton, 1911.

Bulletin 44. *Indian Languages of Mexico and their Geographic Distribution.* Cyrus Thomas, assisted by John R. Swanton, 1911.

Bulletin 45. *Chippewa Music.* Frances Densmore, 1910.

Bulletin 49. *List of Publications of the Bureau of American Ethnology.* With index to authors and titles.

Bulletin 50. *Preliminary Report on a Visit to the Navaho National Monument, Arizona.* J. Walter Fewkes, 1911.

Bulletin 51. *Antiquities of the Mesa Verde National Park: Cliff Palace.* J. Walter Fewkes, 1911.

In the 27th annual report of the Bureau of American Ethnology (1910) there is a paper on "The Omaha Tribe," by Alice C. Fletcher and Francis La Flesche. Occasional anthropological publications appear in Smithsonian publications other than those belonging to the Bureau of Ethnology (see *Smithsonian Annual Reports* and *Smithsonian Miscellaneous Collections*).

The Department of Anthropology of the U. S. National Museum, under the curatorship of Prof. W. H. Holmes, has been engaged in the transfer of its exhibits to the new building, where they are now housed. The Mexican Hall, and the Hall of Classic Archeology on the second floor, and the Halls of Ethnology on the first floor have been opened. Especially noteworthy are the large family groups typical of certain peoples and regions, several of which are in place, and several in the hands of sculptors and preparators. These groups form the ground work for the ethnical arrangement of the Halls of Ethnology.

Dr. Ales Hrdlicka was sent to South America for the purpose of investigating the evidences of ancient man in that continent. He spent several months examining the collected data and making personal investigations of the locality and sites whence the specimens were derived. Some of the results have been published in *Smithsonian Miscellaneous Collections*, 56, No. 16, 1911. Large collections were brought from South America by Dr. Hrdlicka and placed in the National Museum. Cultural material from the Mohave Indians of Arizona was gathered by J. P. Harrington while studying these Indians under the auspices of the School of American Archeology, Archæological Institute of America. Francis La Flesche, while on field work for the Bureau of American Ethnology, secured for the Museum several precious medicine packs from the Osage Indians. The explorations by Dr. J. Walter Fewkes in the Pueblo region for the Bureau of American Ethnology, have added important collections to the Museum from Casa Grande, and the Navaho National Monument country, northern Arizona. Miss Frances Densmore secured specimens from the Ojibwa Indians relating to their symbolism and costume. F. W. Hodge collected a number of ancient Pueblo artifacts from the ruin of Amoxiumque, near Jemez, which he excavated during the past summer jointly with the School of American Archeology. He also procured squeezes of the inscriptions made by early Spanish explorers and officials on Inscription Rock, east of the pueblo of Zuni, New Mexico.

Worcester: Clark University.—Prof. Alex. F. Chamberlain at the head of the Anthropological Department, has contributed to the new (11th) edition of the *Encyclopaedia Britannica* the article on the "North American Indians"; likewise to Monroe's *Encyclopaedia of Education* articles on "Criminality in Children," "Education and Crime," and "Eugenics." The results of his extensive study of the "Linguistic Stocks of South American Indians" are appearing in the *American Anthropologist* and the *Journal de la Société des Américanistes.* Dr. Chamberlain has also edited W. W. Tooker's *Indian Race-Names on Long Island* (New York, 1911).

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XXX. PSYCHOLOGY AND PHILOSOPHY

J. Mark Baldwin

In the article in last year's Year Book a general account was given of recent movements in these subjects. This may serve as introduction for the indications of this year also, especially as there have not appeared works of importance outside of the lines there drawn, except in one subject, anthropology, to which I return below.

General, Comparative and Experimental Psychology.—In the realm of animal psychology American work has been well to the fore. It has consisted, however, here as in other countries, of detailed experimental studies (see the "Comparative Psychological Number" of the *Psychological Bulletin*, Aug. 15, 1911, for classified notices over the whole field). A work of importance is *Light and the Behavior of the Lower Organisms*, by S. O. Mast, of Baltimore. Dr. Mast writes from a point of view which rejects the mechanical interpretations of the movements of low organisms. He goes so far as to throw out the term "tropism" altogether as having become too ambiguous and confusing. His book gives a competent historical and critical account of the theory of responses to stimulation, especially to light. Prof. Thorndike's experimental studies of the higher animals have been brought together in a volume entitled *Animal Intelligence*.

In experimental psychology, discussion and research have turned upon restricted special questions, such as that of "imageless thought" (have we thought without images?). A critical résumé of the work on this topic, written by Ogden, will be found in the *Psychol. Bulletin*, July 15, 1911. Angell discusses it deftly in general terms in the *Psychol. Review*, Sept., 1911. The importance of the topic resides in the rôle of the supposed imageless thought in suggesting a mode of knowledge not exhausted by the content, the images, presented to consciousness. The recent advances in the theory of "meaning" anticipate the result of experiments, showing that the images present in the processes of thought by no means exhaust the meaning of the terms and concepts employed. There is always a broader "intent", affective and motive, selective and not recognitive—to employ the present writer's terms to express the distinction—which attaches to the content, and which is not given in images. The recognition of this and its interpretation gives to the advocates of one or other of the sorts of "alogism" and intuitionism now coming into fashion a foothold in psychology.

Our library of textbooks in psychology has been enriched by three works, all of them good: *Essentials of Psychology*, by Prof. Pillsbury, of Michigan; *Introduction to Psychology*, by Prof. Yerkes, of Harvard, and *Introduction to Experimental Psychology*, by Dr. Myers, of Cambridge University. Of these the work of Yerkes departs most widely from traditional lines. The author advocates the sufficiency of psychology as a science and its ability to do its own work in its own way in relative independence of physiology and neurology. In method he emphasizes introspection. Prof. Pillsbury goes to the other extreme in defining psychology as the science of "human behavior," thus seeming to concede for man what the animal psychologists are advocating for the lower forms, a purely objective point

of view. The author does not seem himself, however, to find feasible the radical application of such a method. Prof. Myers' book is a shorter manual designed for a Cambridge series.

Logic.—In the logical field, the movement in the direction of instrumentalism signalized in our last year's report has been carried forward by the same group of writers, reinforced from unexpected directions. Prof. Pillsbury, of Michigan, has published *The Psychology of Reasoning*, a remarkably clear and judicious treatment of the processes of thought, centering about the theory of judgment. He justifies a new "psychologism," carrying on the tradition of the school, but with large confessed indebtedness to the writers who have developed the instrumental, social, and genetic points of view. Prof. A. W. Moore, of Chicago, has gathered into a volume, with supplementary chapters, his various constructive and controversial articles on pragmatism and its foundations (*Pragmatism and its Critics*). It does not, I think, carry the pragmatic propaganda beyond the limits suggested in our last report, despite Prof. Moore's genuine conviction that individualism and relativism are not really difficulties inherent in the pragmatist metaphysics. Prof. Dewey has applied the theory of instrumentalism to educational practice, in his little book *How We Think*. Prof. Baldwin has issued the third volume of his *Thought and Things* under the subtitle *Interest and Art*. In this volume, which is to be followed by a fourth and concluding instalment of the work, he carries the genetic point of view into the discussion of the "logic of practice" and the "logic of art." In the former, use is made of the researches of Ribot on affective logic, and a genetic theory of the practical reason is worked out. The rules of practical reason are the issue of the mediation of ends by means, at the limit at which the means fall away, and the ends become formally absolute principles. In the part on the aesthetic, the theory of *Einfühlung* is developed in union with that of aesthetic "semblance," the author finding in the aesthetic the synthetic category through which the most comprehensive and profound intuition of reality is attained. This view is to be worked out, as he announces, in the later volume. The name "Pancalism" is given in advance to this philosophy of aesthetic immediatism.

Social, Political, and Anthropological.—It is in the realm of social and anthropological fact and theory that the confirmations of the genetic and instrumental points of view would be anticipated, and it is just here that such confirmations are forthcoming. This is strikingly shown in a notable work, *Les Fonctions mentales dans les Sociétés primitives*, by L. Lévy-Bruhl of Paris. (See also YEAR BOOK, 1910, XXVI, *Anthropology and Ethnology*.) In this work, M. Lévy-Bruhl protests against the individualistic and logical interpretations of primitive mentality of the English anthropological school, and shows, by evidence of abundant quantity and first-rate quality, that primitive modes of thought are in a very real sense prelogical and social: they are dominated by *représentations collectives*, and the individuals' beliefs and actions are ruled by a law by which both things and minds "participate" in a common mystic meaning. As he says, the primitive mind is "oriented" not like ours toward neutral and objective fact and truth—not, that is, toward what escapes logical contradiction and embodies logical consistency—but toward that which embodies social solidarity and secures it through mystic participation. Emphasizing possibly a little too much the differences between the two modes of thought, logical and prelogical—for all mentality, in different degrees of development and with remarkable variations of emphasis and interest, belongs to a continuous racial movement—nevertheless M. Lévy-Bruhl's demonstration in the domain of racial psychology, of truths correlative to those recent psychologists have pointed out in the genetic psychology of the individual, is welcome. The child has its really prelogical stage, and this stage is characterized by motives and processes which in the main reinstate and illustrate those

of his primitive forbears. In the preface to the work mentioned above, *Interest and Art*, the present writer has pointed out certain of the confirmations given by M. Lévy-Bruhl's work to results reached by him—and no doubt other writers will find similar points of agreement—thus noting the coming of the *rapprochement* so greatly to be desired between anthropologists and psychologists.

In social theory proper, an interesting American work is that of Prof. W. Fite, of Chicago, entitled *Individualism: Four Lectures on the Significance of Consciousness for Social Relations*. The author attempts, despite much recent work in social psychology and instrumental ethics, which have generally been considered as tending in the contrary direction, to reinstate a higher and more rational individualism. He holds that a choice in the direction of self-interest, if fully developed and informed, will include the motives of social solidarity and "expression," and will recognize the interests of others, in the larger synthesis which motives the decision to pursue one's own. It is an interesting reaction from the possibly too ready acceptance of "socializing" motives in ethics and politics. But in its attempt to reach the wider synthesis of motives—in which the choice of the individual, although motived by self-interest, will do no injustice to the equal rights and similar choices of others—it is a question whether the term "individualism" does not lose most of its proper connotation. Unfortunately, the author does not take space to relate his theory to others; his references show familiarity with only a small and somewhat local group of writers.

The relation of individualism and collectivism, considered objectively as embodying themselves in social life and progress, is the topic of the present writer's little book, *The Individual and Society*.

We note the issue of a second edition revised of Prof. Bosanquet's *Philosophical Theory of the State*, whose central thesis remains unchanged; and the publication of a discussion of world organization by D. J. Hill, ex-Ambassador of the United States to Germany (*World Organization and the Modern State*). In this work the writer finds the inherent ground of world-organization—its intrinsic *raison d'être*—to reside in the nature of the state itself, as modern theory understands it. If the state is a quasi-person whose rights and duties are in any sense analogous to those of a person, then the interstate jural relationships should be developed in a world-organization of states, as those of the individual are in the state itself.

Other important sociological publications are the *Annales de l'Institut International de Sociologie*, two vols., xii, xiii, 1911, devoted to discussions of "Solidarity" as presented at the last meeting of the *Institut* at Berne, and *The Mind of Primitive Man*, by Prof. F. Boas, of New York, the latter giving in book form a number of the author's studies on racial questions, heredity, influence of environment, mental traits, language, aspects of culture, etc.

Philosophy Proper.—The year 1911 has seen the issue of few constructive works to which immediate importance has attached. The unfinished posthumous book by the late Wm. James, *Some Problems of Philosophy: A Beginning of an Introduction to Philosophy*, is a fresh and inspiring attempt to treat the time-worn problems from the standpoint of life and practice. It assumes, however, the philosophical positions familiar to readers of the author's earlier books; and besides, unfortunately, it is unfinished. It would have been interesting to follow the writer in the application of his views more systematically. The critical essays and appreciations written by James have been gathered into a volume entitled *Memories and Studies*.

Intuition.—The translations into English of the works of Bergson, *Time and Free-Will* (*Les Données immédiates de la Conscience*), *Matter and Memory* (*Matière et Mémoire*), *Creative Evolution* (*Évolution Créatrice*), and *Laughter* (*Le Rire*), have served to clarify the atmosphere, by reason of the need of defining the relation of this author's

views to those of the avowed pragmatists. The new Oxford lectures, *La Perception du Changement*, are now to be also taken into account.

Prof. James himself opened the discussion by his appreciative notices of Bergson (in *A Pluralistic Universe* and elsewhere), and others, including Bergson, have taken up the question. It all depends, of course, upon the definition of pragmatism, for there is in our opinion no ambiguity about Bergson's position. He is an immediatist, an intuitionist (in his own acceptation of the term); neither a rationalist nor a voluntarist. What he has in common with all forms of pragmatism is his "alogism" (a word used indeed very early by Bergson himself to define his position); he disbelieves in the adequacy of thought. It is another thing, however, to go from this to the assertion that he is a pragmatist; for he is equally positive in his disavowal of the adequacy of action or practice for the revelation of reality. He makes the intellect the servant of action it is true, but just *for this reason* finds it inadequate to disclose the real. Both action and thought result, he is continually proclaiming, in the discontinuous, "snapshot," "cinematographic" disclosures which are mere points of view, and which prevent the apprehension of the continuous flux in time by which the real is constituted. It is only by a different sort of effort, a sympathetic intuition, immediate in its character, and direct in its method, that the absolute, the "really" real, is discovered. It is an enduring, changing, creative reality known only by living in it.

This is fundamental and essential in Bergson's thought; and it is as far removed from all forms of utilitarianism as it is from all forms of rationalism. The real is given in life, in the experience of immediate duration, not by mediating processes either of practice or of thought; and in so far as either an end of action or an image of thought is erected between the living self and the life it lives, reality is distorted and made fragmentary.

This can not with any justice be called pragmatism, unless that term is to cover all forms of "alogism" and to have no further differentia. It comes under the heading of immediatism, as expounded in our last report, which is allied with affectivistic, and, in its Bergsonian form, with mystic, views. Many passages seem to indicate that Bergson may finally develop the hints he has already thrown out, that in aesthetic immediacy is to be found the intuitive sympathy with reality which most fully discloses its nature: a type of view for which the generic term "Pancalism" has been suggested as is indicated above.

Thought.—A new work devoted to the discussion of thought—the central problem of the philosophy of the day—with authority and vigor is the *Pensée humaine* (trans. 1911, from the Danish) of Prof. Höffding, of Copenhagen. Höffding agrees in general with the instrumentalists that thought is the instrument of life and action; but he does not agree either with the pragmatic or with the Bergsonian "alogists" in decrying and minimizing its function as a source of knowledge of the real in the singular and concrete. On the one hand, he agrees that thought is not to be construed as an absolute principle, static and given in a certain distant and ineffective universality—a set of categories through which the pith of the real sifts and is lost. On the contrary, he finds in thought the actual and vital instrument of the apprehension of reality. Furthermore, he does not agree that thought is only and essentially "geometrical," schematic, and general, cutting up the real into conceptual bits which only intuition can restore to real continuity. This he considers an untrue account of the actual functions of thought. The sharp dualism of functions by which, on the one hand, the rationalists place the pure intellect apart from the unformed and chaotic data of sense, and by which, on the other hand, the intuitionists deny to it the function of the discovery of an undistorted actual—this common dualism is in principle denied by him. The entire human achievement of knowledge is one; it is a movement of a progressive life; the intelligence

is of that endowment of life which makes its living profitable, its apprehension reliable, and its truths true. The book is not helped in our view by the theory of "mental energy," which the author attempts to apply; at the best this is a lame and confusing analogy. The work has too much the character of a didactic *résumé* of the author's earlier publication—reading like a text-book. It is strong, however, on the historical side: see notably the critical account of the Comtean theory of stages of racial interpretation (Part II).

Apart from details of an analysis always penetrating and an intuition generally sure of itself, one may consider this volume as a sign of the settling of doctrine again in a larger reasonableness after the very erratic swinging over to radical anti-intellectualism. Another volume bearing a similar message of mediation is *La Pensée et les nouvelles Ecoles Anti-Intellectualistes* of Fouillée. Alogism, in the sense of a view which denies to thought a place in the valid and final apprehension of reality, is too extreme; it is a reaction against absolute rationalism. In order to recognize the legitimacy of intuition, we do not need to turn thought from the door. Nor do we need, in order to do justice to thought, so to assert its rôle that only the general and universal are allowed the dignity of sonship in the paternity of the real. Let the modes of apprehension pull together, as in their actual living relationship, doing team-work in the scrimmage which is life. This is the mediating rôle of Höffding and Fouillée, a rôle that is to grow more and more important until the thinker arrives who will show us in theory how the team work is organized to keep on winning the human game.

A work of acute criticism is *Dogmatism and Evolution*, by Th. and G. A. De Laguna. We note also *Body and Mind*, by Prof. McDougall, which is, as the sub-title indicates, "a history and defense of animism."

Bibliographical works are the *Année Sociologique* of Durkheim, vol. xi, literature of 1906 to 1909 (this work will hereafter appear only triennially, and will devote itself entirely to bibliographical matter); the *Année Psychologique* of Binet, vol. xvi, containing, besides the analysis of important books and papers, a series of contributions to the theory of alienation by Binet and Simon. It is announced by the Editor of the *Psychological Index*, Prof. Warren, of Princeton, that an arrangement has been made whereby that publication and the German bibliography of the *Zeitschrift für Psychologie* will in the future employ the same detailed classification. An unrevised reprint of Baldwin's *Dictionary of Philosophy and Psychology* has been issued. The "Proceedings" of the fourth International Philosophical Congress, held at Bologna in April, 1911, may be consulted for indications of the general lines of present interest.

Works of exposition to be signalled are Villa, *Psicologia contemporanea*, 2 ed.; Wenley, *Immanuel Kant and his Revolution;* Dessoir, *Geschichte der Psychologie*, 2 ed.; and *La Pensée contemporaine* by Paul Gaultier. The death of William James has called out various expositions of his views, notable among them being Boutroux, *William James*, and Menard, *Analyse et Critique des Principles de Psychologie de W. James.* Prof. Flournoy's conservative and able *Spiritism and Psychology* has appeared in English.

Necrology.—The death is to be recorded (on Oct. 18, 1911) of Alfred Binet, the distinguished French psychologist, Director of the Psychological Laboratory of the Ecole des Hautes Etudes and Editor of the *Année Psychologique.*

XXXI. MEDICINE AND SURGERY

MEDICINE

ALEXANDER LAMBERT

Typhoid Vaccination.—Although prophylactic injection against typhoid fever is not new, its value has been strikingly illustrated within the past year, in the inoculation of troops in the recent army maneuvers in Texas and along the Mexican border, and the results obtained in the freedom from typhoid fever. (See also XVIII, *Public Health and Hygiene.*) The strength of the command at San Antonio was approximately 12,000 men, and among these only two cases of typhoid fever occurred, one being an uninoculated civilian teamster, and the other a soldier who had been inoculated and who has had a very mild type of the disease, his fever running only two weeks. Heretofore, wherever troops have been mobilized, or wherever large numbers of men have been gathered together, typhoid has inevitably broken out with the resultant inevitable loss of life. During the Spanish war 20,738 men, or one-fifth of the entire army, suffered from this disease, and the 1,580 deaths from typhoid fever formed 86 per cent. of the total mortality of that war. These figures seem appalling, but were not unusual in view of the knowledge possessed at that time, and at the time of previous wars, for in the Northern army alone in the Civil War there were 80,000 cases of typhoid, and during the Franco-Prussian war there were over 73,000 cases, with 8,700 deaths among the Germans alone,—and 60 per cent. of the total mortality was due to this disease. In the war with the Boers the efficiency of the English army was seriously crippled by the great prevalence of typhoid, there being some 31,000 cases with 5,800 deaths.

Recently the ideas regarding the mode of transmission of typhoid fever have been undergoing a decided rearrangement. Formerly it was believed that typhoid was a water-borne disease, and that if the water supply of a camp or community could be kept from pollution and the sewage properly cared for and disposed of, typhoid would not break out. It was noticed in the Spanish war, however, that there were typhoid epidemics in the camps when neighboring towns having the same water supply were practically free from the disease, and the report of the Army Board which investigated the prevalence of the disease in the camps at the close of the Spanish war showed conclusively that 65 per cent. of the cases were contact typhoid, and that the healthy men helping the ailing comrades to roll their blankets, fold their tents, and take care of their clothing, became infected. It thus was seen that although there was a lack of proper screening of the latrines from flies, and much infection may have occurred through this means of conveyance, yet each company of the separate regiments seemed to show a variation in the peculiarity of its epidemic. Where the original source of the epidemics was probably located remained unrealized. It was noticed in Germany that after each of the maneuvers typhoid was brought by the soldiers from the villages to the garrison. Koch and his assistants were sent to find if some means could not be devised by which the spread of typhoid could be checked. They found that the bacilli were retained in the intestines of convalescents much longer than was supposed, and

that in about 25 per cent. of the patients the bacteria were discharged in the urine during convalescence. It was further found that many people do not cease to be typhoid carriers for a number of months or years after their recovery. One such typhoid carrier gave a history of having had typhoid fever 52 years before.

The existence of these chronic typhoid carriers has thrown a new light on the causation of the disease, and they have been reported from every land. A recent report on the typhoid carrier by Ledingham of England and reviewed by Grimm in the Public Health Report No. 58, 1911, contains much new and interesting information concerning these sources of danger. The typhoid carriers are classified by various writers in various ways. The most comprehensive seems to be that of Saccaqupée, and is as follows: (1) precocious carriers, those carriers in the incubation stage of the disease; (2) persons who have recovered from typhoid but who continue to eliminate the bacilli, who are divided into two sub-groups: (*a*) convalescent carriers who cease eliminating bacilli before the end of the third month, and sub-group (*b*) chronic carriers, those who eliminate the bacilli for an indefinite period; and (3) paradoxical carriers, those who have never had even the symptoms of typhoid fever, but who eliminate bacilli for an indefinite period. The frequency of the carriers among those who have had typhoid varies greatly. Different observers report the temporary carriers as occurring 2 to 11 per cent., while the chronic carriers vary from 0.5 per cent. to 11.6 per cent.; but it is a noticeable feature that the more carefully the work has been done and the better the bacteriological technique used, the higher the percentage of the chronic carriers becomes. Women in the ratio of 5 to 1 are more frequently chronic carriers than men, although among temporary carriers the sexes are about even. The great majority of chronic carriers are among persons between 40 and 45 years of age, while the greatest number of transitory carriers occur between the ages of five and ten years. This is well seen from the statistics of Frosch, who found in 6,708 cases of typhoid that 310 became carriers; 144 of these were transitory and 166 chronic. Females form 80 per cent. of the chronic and 60 per cent. of the transitory. Children under 14 years of age formed only 4 per cent. of the chronic, and but 35 per cent. of the transitory. Even small babies may be carriers without going through an attack of typhoid fever, and may be the means of starting a serious epidemic. It has also been shown by studying a large number of patients infected by contact in which the sources of infection were known, that the period when the secondary cases received infection could be made out. It was found that the incubation period of typhoid averaged about 16 days, that a certain number of patients began to excrete typhoid bacilli in the first week of their incubation period, and a still larger number in the second week, and that during the first week of the disease the greatest number of secondary cases were infected by the primary ones. This is rather a startling discovery, for it makes us realize that a person who is about to have typhoid may be a source of infection in the incubation period of the disease before he has any symptoms to make him realize, or any one else recognize, the fact that he has acquired the disease and is about to come down with it. At present the pathogenesis of the carrier state must be put down as unsolved, and the treatment of this condition is also unsatisfactory. What percentage of the total occurrences of typhoid fever is due to the chronic carriers, of course, cannot be definitely stated, but Simonds draws attention to the fact that in 1906 in Strasburg out of 2,080 sick with typhoid, 978, or 47.7 per cent, were traced to their sources, and of these 746 were from so-called contact typhoid, 49 of these cases being caused by bacilli carriers. Thus 2.4 per cent. of all cases, or 5 per cent. of those the source of which were discovered, were due to typhoid carriers. Other statistics shows that from 9.5 per cent. to 20 per cent. have been due to carriers. The yearly number of typhoid patients in the United States is easily some 350,000, and when we realize that 10,000 of these, on the small

basis of 3 per cent., become chronic bacilli carriers every year, we realize what a large chance there is for typhoid breaking out where masses of people are gathered together, and those who have not had the disease remaining unprotected by immunization. Only by some accidental examination of the dejecta, or the systematic examination in searching for the cause of some epidemic can it be ascertained who are typhoid carriers and who are not. They may remain unknown for years and be a constant menace to their environment.

A. E. Wright of India in 1896 was the first to try prophylactic injections for typhoid. He inoculated some 18 men with good results. Two years later vaccination was introduced into the British army in India with encouraging results. During the Boer war these inoculations were continued, and although the English army was so crippled by the prevalence of typhoid, Wright gathered statistics of some 19,000 men in which the occurrence of the disease seemed to be diminished one-half, and the mortality of the disease much lower than this. The Germans again tried the inoculations in the Hereros campaign. Among the uninoculated soldiers the percentage of cases was 9.84 per cent., while among the vaccinated it was only 5.9 per cent., or about half as many. The value of the vaccination was also shown in that the light cases greatly predominated among the vaccinated, although the moderately severe cases were present in both classes in about the same percentage. The very severe cases were distinctly fewer in the inoculated than in those who had not received the vaccination. The percentage of fatal cases was 6.4 per cent. for the inoculated and 12.8 per cent. for the uninoculated.

These results were sufficiently encouraging to cause Surgeon-General O'Reilly to convene in Washington two years ago an Army Board to consider the matter. This Board recommended that typhoid inoculation be used in the United States Army. The inoculations were to be voluntary and were to be offered to the entire army, but if war developed it could be made compulsory. In the spring of 1911, after two years' experience, they have been made compulsory. The results, briefly, are as follows: In Dec., 1910, among 12,644 persons who had been vaccinated, there had been five cases of typhoid with no deaths. All were very mild in type. During the same period there occurred in the remainder of the army 418 cases of typhoid, with 32 deaths. In a general way it may be said that about one-seventh of the army was vaccinated at this time, and had 5 cases with no deaths. In the other six-sevenths of the force, there had not been 6 times as many, or 30 cases, but 418 cases with 32 deaths. The total number of cases of typhoid among the vaccinated in the army since inoculations were begun in 1909, has been 11, with no deaths. During 1909, within the geographical limits of the United States, there were 173 cases of typhoid and 16 deaths. In 1910 there were 142 cases with 10 deaths. During the first six months of 1911 there were 16 cases and 3 deaths, and this may be compared with the first six months of 1910, in which there were 29 cases and 1 death, as showing the mortality in both years to have been among the non-inoculated. During the first six months of 1911 the maneuver camp at San Antonio offered great possibilities for an outbreak of typhoid, for in the town of San Antonio typhoid fever prevailed during the entire time, and during the four months ending June 30, 1911, there had been reported 49 cases with 19 deaths. The freedom of this maneuver camp with a mean strength of 12,000, composed as it was of men at the time of life when they are most prone to acquire the disease, is the most striking example yet afforded of the efficacy of the prophylaxsis against typhoid. In Galveston during the same period there have been stationed between three and four thousand men. No cases of typhoid occurred among these troops, although 192 cases were reported in the city during the same period. Quoting further from the Surgeon-General's report in 1911:

> The water, milk, and to a considerable extent the food supplies were identical. The camp site adjoined the city, and the men spent much of their time when off duty in the city, where they

ate, drank, and slept. Had one wished to conduct an experiment on a large scale, he could hardly have wished for better conditions than existed at this place. There are two circumstances in which the condition of the troops differed from those of the inhabitants of Galveston: camp life with its absence of sanitary plumbing, and the fact of immunity against typhoid by bacteria vaccines. The troops living under the disadvantage of a camp but protected by inoculation had no fever, while in the city with its comforts and conveniences but without anti-typhoid vaccines, cases of fever were frequent.

The vaccine itself is prepared as follows: The culture used is an old stock culture in the laboratory showing the various peculiarities of the typhoid germ. It is a non-virulent culture, giving an abundance of anti-bodies after inoculation. The non-virulent culture is preferred to a virulent culture, because while the local and general reaction of the virulent culture is greater, it does not seem to produce any more anti-bodies in the body than the non-virulent after inoculation. The cultures are grown in agar jelly in large flasks, and after 48 hours the growth is washed off with sterile salt solution, gathered into flasks, and the number of germs counted and standardized so that one billion germs shall be contained in 15 drops, or 1 c.c. It is then heated for one hour at 60° C., precautions taken to insure and prove its sterility, and it is then put up in glass ampules and stored ready for use. The first dose is a half a cubic centimetre, containing 500 million bacteria. The second and third doses contain a billion bacteria, and are given ten and twenty days after the first dose. All the injections are made in the subcutaneous tissue of the arm, for if the local reaction be severe it is easier to immobilize an arm than a leg. The immediate effect of the injection is either a smarting pain, gone in a few minutes, or the patient may be unconscious of having received an injection. Nothing further is noted until four or five hours afterward, when there may be headache or malaise, and at the site of inoculation a red and tender area about the size of one's palm. The headache and other symptoms are rarely sufficient to interfere with sleep, and by next morning all symptoms have usually disappeared. In 96 per cent. of the cases the men are able to eat a good breakfast and carry through the day's work without inconvenience. The local reaction is fairly constant and neither personal idiosyncrasy nor the size of the dose causes much variation. It begins to appear in from four to six hours and reaches its full development in twelve, gradually subsiding and disappearing in from 48 to 72 hours. Occasionally, especially in children, after the third dose there is little or no reaction. On the other hand, the local symptoms may be unusually severe, and the arm swollen from shoulder to wrist, but this swelling disappears in about 24 hours, and is not followed by permanent change or suppuration. Even these extensive local reactions are not particularly painful. In a very small percentage of cases the general reaction is quite severe, and may last three or four days. The following table shows the number of doses and the percentage in which the general reaction occurs, and its severity:

	Number of Doses.	Absent.	Mild.	Moderate.	Severe.
		Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
First	45,680	68.2	28.9	2.4	0.3
Second	44,321	71.3	25.7	2.6	0.2
Third	38,902	78.0	20.3	1.5	0.1
Total	128,903	....	....	....	....

It is seen that the general reaction is absent or mild in practically 99 per cent. of the inoculated, and even in the severe reactions the severest last but three or four days, which is but a little thing compared to the usual three or four weeks of a case of typhoid fever. The protection afford-

ed seems to last two or three years, and this protection and the immunity afforded compares favorably with the familiar vaccination against smallpox.

Syphilis.—H. Noguchi has reported a success in the cultivation of the *Treponema pallidum*, the infecting agent in syphilis, in pure culture. All previous attempts had succeeded in cultivating only impure cultures which had not proven virulent nor able to produce the characteristic lesions in animals. Noguchi's pure culture on the other hand has gone through 25 generations and has produced in rabbits the characteristic lesions of syphilis. The culture medium employed was one consisting of one part serum of horse, sheep, or rabbit, and three parts distilled water, to which a piece of sterile rabbit tissue, kidney or testicle, had been added. The cultures were grown under strictly anaerobic conditions. The tissue seems to be necessary for their growth. Noguchi also succeeded, after some generations, in cultivating them in a solid medium, and obtained characteristic colonies of the germ. (*Journal of Experimental Medicine*, Aug. 1, 1911.)

Noguchi has further reported the use of a sterile suspension of these micro-organisms which he designates as "luetin." On injecting a sterile suspension into the skin he has obtained in syphilitic subjects a reaction similar to that obtained by von Pirquet in those suffering from tuberculosis. This reaction is due to the anaphylaxis or increased susceptibility of the skin resulting from the infection of the syphilitic virus. A similar reaction had been previously obtained by inoculating the skin with infected tissue. About 400 patients have been tested, including about 50 normal individuals, and 100 who were suffering from various non-syphilitic diseases. The luetin was given by cutaneous injection of 0.05 c.c. In the normal, the non-syphilitic, patients there was no reaction beyond that resulting from the slight trauma of the inoculation. In all the tertiary cases of syphilis in which there were evident lesions, there was a positive reaction of induration, erythema, and finally pustulation. Some tertiary cases previously treated with mercury or with Salvarsan and presenting no manifest lesions, gave a distinct positive reaction, although the Wasserman reaction was either weak or negative. In primary cases of syphilis the reaction was almost invariably negative. In secondary syphilis a positive reaction was reported in more than one-half of the cases treated with mercury and more than two-thirds of the cases treated with Salvarsan; 90 per cent. of the cases of hereditary syphilis showed a markedly positive cutaneous reaction. This was also true in latent syphilis in which there were neither symptoms nor Wasserman reaction. The great value and significance of this cutaneous test seems to be its ready applicability by the general practitioner in latent and doubtful cases where the Wasserman reaction has been reported negative. This is particularly true in the diagnosis of tertiary cases, and in latent or inherited disease. It supplements the Wasserman reaction, which evidently, however, still retains its value in the primary and secondary stages of the disease.—(*Medical Record*, Nov. 25, 1911.)

Protozoan Cultures.—It was reported at the meeting of the Society for Experimental Biology and Medicine, Feb. 15, 1911, by Dr. Anna W. Williams that she had succeeded in growing for the first time parasitic amebas. The endeavor was made to obtain pure cultures with both the *Entameba coli* from a human amebic dysentery, and a saprophyte, *Ameba lirnax*. Only the culture from the human dysentery grew, but this developed with comparative ease and some abundance on agar streaked with brains of rabbits which had died from rabies. Although the attempt to obtain the Negri bodies through the possible engulfing of these bodies by the amebas, and thus obtain a pure culture of the Negri body, was unsuccessful, a pure culture separated from all bacteria and carried on through many generations was successfully obtained. This is the first time that the parasitic amebas have been grown in pure cultures, although it has been several times reported that investigators had succeeded in growing amebas for three or four gen-

erations without contaminating bacteria. It would seem that these were merely the separation of amebas with food stored up within themselves. Dr. Williams has succeeded in growing on agar with sterile normal brains the cultures of these ameba for many generations, transplanting them every two to five days. The technique as described is quite simple, and marks quite an advance as being the first parasitic protozoan that has been successfully separated into a culture.

Circulation in the Peripheral Mechanism of the Body.—That fluids can circulate through a body after the circulation through the blood vessels has ceased, has been known for some time, but the pathways by which this took place has remained unknown until recently the work of Meltzer (*Journal of Experimental Medicine*, May 1, 1911) has shown that it is through the peripheral lymph spaces that this occurs. In frogs which had been anesthetized, the heart ligated off from the circulation and the ventricles of the heart cut off, it was found that strychnine, adrenalin and morphin produced their characteristic phenomena when subsequently injected into the lymph spaces of the tissues under the skin. The general conception has been that the fluids of the body circulate by means of the heart and blood vessels and lymphatics, the lymphatics being smaller vessels than the veins, acting like the veins to drain the fluids of the blood and body back into the veins, the lymphatics emptying the collected fluids into the sub-clavian veins at the root of the neck on either side. Of course, in considering all tissues one must realize there must be spaces between the cells or groups of cells by which the nutrient fluids may reach them to give them nourishment. It has usually been considered that these lymph spaces were connected with the lymphatics, and drained back into the vascular system by means of the lymphatics. This work of Meltzer shows that the lymph spaces are evidently connected and form a system by means of which a circulation is kept up independent of blood vessels and lymph channels, and which goes on after the circulation in the blood vessels and lymphatics has ceased, for the lymphatic system as well as the blood system is dependent upon the pumping of the heart to keep it moving. It is of interest to note that Meltzer reports that when morphin is injected into these cardiectomized frogs, the effects are much greater and incomparably more rapid than when administered to a normal frog. Normal circulation probably contains substances derived from some organs capable of multiplying or retarding the specific effects of morphin. This peripheral mechanism of circulation found to be active in cardiectomized animals is probably, according to Meltzer, identical with the mechanism which serves also as a distributing system in living animals which do not possess a circulatory apparatus.

The Micrograph.—Albert C. Crehore and Frank S. Meara (*Journal of Experimental Medicine*, May 1, 1911) have described the "micrograph," an instrument which records the microscopic movements of a diaphragm by means of light interference. Through this means the most delicate movements of the heart can be recorded, or records of sounds, such as that of the human voice, can be obtained. The instrument contains a thin metal diaphragm similar to that of a telephone, on one side of which there is an air chamber connected by a tube to a tambour receiver located on any desired portion of the body. There is thus a confined volume of air, one portion of which bears upon the body, which acts as a transmitter, and another portion upon the telephone diaphragm, which acts as a receiver. The diaphragm is free to respond to all the vibrations transmitted to it through the medium of the confined air column and the motion produced in the diaphragm is too small to be observed directly by the unaided eye. By means of the interference of light method the motion of the diaphragm itself is magnified about 50,000 times, so that the motion becomes directly visible to the eye. A plane mirror, polished on its upper surface so as to make a metal reflector, is supported by means of a small block at the center of the diaphragm, participating in all its movements. Just above

this reflector is supported a cylindrical plano-convex lens, with the plane surface on the under side so that it can be adjusted parallel with and close to the reflector without touching the latter. If a mercury-vapor electric lamp is placed directly above the instrument, and an observer looks down into it, a series of brilliant interference bands of light are seen between the two reflecting surfaces, the lower being attached to the mirror, and the upper to the plane surface of the cylindrical lens. The position of these interference bands depends upon the adjustment of the lens, that is, upon the distance apart of the two surfaces, and whether they are parallel. When the surfaces are separated by a small distance and are parallel, the bands appear circular in form, consisting of a series of concentric rings. As the diaphragm moves, as influenced by the air pressure from the tambour placed on the body, as, for instance, over the heart, the reflecting surface approaches or recedes from the lens, and these motions cause the circular bands to contract or expand, respectively, but they remain of a circular form and the center of the system does not move. A record of the motion of these bands is made on a photographic film which passes at variable but definitely controlled speed across a slit, the speed of any one record being constant. The light reflecting up from the mirror, each band leaves its trace upon the film in the form of a wavy line. These lines can be plotted out into regular curves and the curves interpreted.

This means of measuring the movements in the cardiac cycle is one of extreme delicacy, and it seems from the further reports of Crehore that it not only records the accustomed record of waves made by the separate contraction of the auricle and ventricle of the heart, as is done with the older instruments, but it further records the motion transmitted to the heart by the closure of the valves of the heart, both the auriculo-ventricular group and the semi-lunar valves. Heretofore the various sphygmographic instruments used to record the motion of the blood in the veins and arteries have been extremely delicate, but the mass and inertia of the moving parts and the distance through which they are required to move, are considerable. As Crehore points out, at the points of the most rapid pressure changes in the cardiac cycle, such instruments overshoot the mark on the up stroke and again on the return, because of the inertia. The important feature of the new instrument is that it reproduces faithfully all pressure changes without the disturbing effects of inertia. It seems as if this instrument were a distinct advance in the special field of the study of the diseases of the heart.

The Heart.—For the last ten years an enormous work has been done, both experimentally and clinically, in investigation of the phenomena of both the normal and diseased heart. A recent book (1911), entitled *The Mechanism of the Heart Beat*, by Thomas Lewis of London, has brought these special studies together in a way to bring them into the grasp of the general practitioner. This is a most timely publication. In 1902 when James Mackenzie published his book on the pulse, it was seen that the systematic study of the tracings obtained from the apex of the heart, the carotid and radial arteries and the jugular vein, and comparisons between these, added enormously to the knowledge of what occurred in the normal and pathologic conditions of the heart. Since that time there has been a widespread study by means of the various sphygmographic instruments which have permitted a simultaneous record of two or three vessels to be taken. While the sphygmographic instruments with levers were being used and perfected, Enthoven brought out a string galvanometer based on the principle of the interaction of a magnet and a conductor of electric current. A single conducting strand lies between the two closely approximated poles of a powerful magnet. Currents passed through the string induce deflections of it which can be seen by means of a microscope passing through the center of the magnet, or these deflections are recorded on photographic films. The strings employed are exceedingly delicate, of finely drawn platinum or of a film of silver over a finely drawn quartz thread, the thickness of the

fibre being .002 to .003 of a millimetre. Electric currents are sent through a patient from right to left arm, or from right arm to left leg, or from left arm to right leg. Each lead gives a different curve, and while the various electrocardiograms, as the curves are called, either physiologic or pathologic, are not all fully understood, because the actual course of events is not yet clear, certain essential facts are evident. The curves show the auricular and ventricular contractions and pathologic variations therein, as well as the normal conduction or abnormal lack of conduction of contractile impulses in the muscle fibres.

Previous to this the profession was dependent upon the stethoscope and manual percussion to obtain their knowledge of the normal heart and the variations from the normal which the various morbid processes in the heart produced. It was possible to say which valves were damaged, and to gauge with a fair amount of accuracy how great the damage might be, judging from the relative dilation and hypertrophy of the walls of the various chambers of the heart. But an accurate knowledge of the conditions of the muscular wall of the heart which was evidently the important portion of the organ as far as its mechanical efficiency was concerned, could not be obtained. The graphic records obtained from the jugular vein showed that a record could be obtained of what occurred within the auricle of the heart, and the rate of transmission of the contracting impulse from the auricle to the ventricle could be measured, and that in comparing this venous record or phlebogram, as it is called, with one from some artery, such as the carotid or radial, an intelligent interpretation of various irregularities of the heart beat could be made out.

To appreciate these advances in medicine, it must be remembered that the heart is a four-chambered organ, divided into a right and left side, without direct communication between these sides. The two upper chambers, the auricles, drive the blood directly into the two lower chambers, the ventricles. From the right ventricle the blood goes to the lungs for aeration, back into the left auricle, thence into the left ventricle and thence throughout the body. The impulse of the heart to contract starts in the auricle, and it has been shown by His, Jr., that the only connecting link between the auricles and ventricles is a single bundle of fibres usually called "His's bundle." Near the junction of the superior vena cava with the auricle, there lies in the human heart some specialized muscular tissue, which seems to be the remnant of the original cardiac tissue of the most primitive hearts. In this specialized tissue the heart beat seems to arise and thence it spreads on one side into the muscular tissue of the auricle, and on the other side by means of His's bundle, down the septum between the right and left ventricle of the heart, following the fibres of the bundle out to the lower end of the right and left ventricles. Normally the contracting impulse passes down with even regularity from auricle to ventricle; but injuries or disease in the fibres of His's bundle causes disturbances in the passage of the contracting impulse which vary from simple retardation of the impulse to blocking it off completely. It has been found that one, two or three impulses from the contracting auricle may occur, and only one go through to the ventricle, or the heart block may be complete and no impulse go from auricle to ventricle. Auricles and ventricles may then beat independently of each other. In the fibres of His's bundle, before they separate to go to each ventricle, there seems to originate a contractile impulse when the auricular impulse ceases to arrive and stimulate them. Irregularities of the heart's action have thus been found to arise from disturbance of the conduction of the contracting impulses, or they may be due to irregularities of contracting impulses arising in the auricle or in the ventricle, independent of the auricular action. In other cases the rhythm of contraction may be arising from impulses coming from either auricle or ventricle in different rates of rhythm,—so that any given contraction may be from the impulse either from either auricle or

ventricle, or from both simultaneously.

These graphic records bring the clinical study of the heart's action within the range of comparison with the curves obtained in experimental laboratory work and have added greatly to the diagnosis and treatment of the various morbid changes occurring in the human heart.

SURGERY

ADRIAN V. S. LAMBERT

Fractures.—During the year no great discovery has been made in surgery, but a decided advance has occurred in the science as a whole. The treatment of fractures of the long bones has become more radical, and the operative reduction is more generally used. Surgeons are becoming convinced that the most satisfactory results can be obtained in many cases by following the technique given by Lane of London a number of years ago. The technique consists of operating on the fractures immediately after injury, or at least within a few days, and exposing the ends of the fragments, (then under direct vision) reducing the fracture perfectly, and maintaining the reduction by means of steel plates which are screwed on to the bones. The wound is closed, and the screws and plate remain permanently *in situ*, the bone healing over it. This method is best adapted to transverse fractures of the shaft of the tibia. It is also the best method in fractures of the shafts of both bones of the forearm preventing as it does the vicious cross union, and it has been employed in cases of old ununited fractures with some excellent results.

Transfusion of blood is now done in a greater number of conditions. Formerly it was used in combating the results of severe hæmorrhage and in some hæmorrhagic conditions, notably the bleeding of the new born, but now it is used in overcoming the severe anæmic state in the cachexia of malignant disease in order to allow the patient to stand the operative procedure necessary for the removal of the growth. It has also been used in certain of the anæmias with benefit. The vascular anastomosis is accomplished by means of one of the mechanical aids or cannulæ, usually that of either Crile or Elsberg.

Administration of Ether.—A new apparatus for the administration of ether by the intratracheal method of Auer and Meltzer has been perfected by Elsberg of New York. This apparatus has simplified and rendered safe the administration of ether on this principle. The method consists of delivering the ether vapor directly into the trachea by means of a tube passed through the larynx. The tube is smaller than the chink of the glottis and the exhaled air and ether vapor escape alongside the tube. This bids fair to replace the various cabinets for operating on the thoracic cavity. Although primarily designed for operations on the viscera contained in the thoracic cavity, it nevertheless has proved of great value in operations about the face and neck. The constant current of ether and air escaping at the intratracheal tube is of great use in operations within the mouth and nasal cavity, and for cases of intestinal obstruction with vomiting. In addition it is said to have fewer ill effects afterward, as vomiting and pneumonia.

Internal Hydrocephalus.—A new operative procedure for the cure of internal hydrocephalus has been reported by Andrews of Philadelphia. A glass rod is inserted through a hole into the lateral ventricle. The glass rod remains in place and drains the ventricle. The skin is united over it.

Œsophagoscopy, gastroscopy, are still more or less in the experimental stage. Numerous new instruments have been invented. They are all made on the principle of a hollow tube with electric light at the lower end to illuminate the structures below the end of the tube.

Janeway and Green report having been able to see and recognize cancer of the œsophagus and of the stomach when the growth is situated at or near the region of the cardia. They are also able to remove for microscopical examination small pieces of tissue by means of a pair of long biting forceps passed down through the tube. In Germany, Lexer and others report that they have made a new œsophagus out of jejunum transplanted beneath the skin of the sternum, and connected with the œsophagus in the neck, by means of an artificially formed tube of skin formed by infolding the skin on the chest. It is said to functionate perfectly and is used on cases in which the œsophagus has been destroyed by the action of caustics and corrosive substances.

Papillary Growths of the Urinary Bladder.—Bier of New York has developed a technique for the cure of papillary growths of the urinary bladder by means of the Oudin high-frequency electric current, which is a great advance in the treatment of these tumours.

X-Rays.—A great deal of work has been done in the X-ray department, especially in regard to the diagnosis of lesions of the viscera, notably intestines and stomach. With the aid of bismuth enemata the presence of new growths of the larger intestine are demonstrable. The work on the stomach is along the same lines and promises to become of great use in the future.

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XXXII. ENGINEERING

THE PROFESSION OF ENGINEERING

WILLIAM KENT

The "profession of a civil engineer" was defined by Thomas Tredgold, in the charter of the Institution of Civil Engineers, in 1828, as "the art of directing the great sources of power in nature for the use and convenience of man, as the means of production and of traffic in states both for external and internal trade, as applied in the construction of roads, bridges, aqueducts, canals, river navigation and docks, for internal intercourse and exchange, and for the construction of ports, harbors, moles, breakwaters and lighthouses, and in the art of navigation by artificial power for the purposes of commerce, and in the construction and adaptation of machinery, and the drainage of cities and towns."

In 1828 the term "civil engineer" meant an engineer in civil life—not a military or naval engineer. At that date a civil engineer was a man like George Stephenson, who could lay out and build a railway and who could design and construct a bridge, a locomotive, or a pumping engine, and direct the "great sources of power in nature" towards any of the objects named in the broad definition of Tredgold. With the growth of the mechanic arts, however, it became necessary for engineers to specialize their work, and the need arose for new prefixes to the general title "engineer," such as "bridge," "marine," etc. In this way the meaning of the title "civil engineer" gradually became restricted to denote a man devoted to the construction of permanent structures, such as roads, bridges, canals, docks, etc., and the title "mechanical engineer" was applied to those who designed and built machinery, "mining engineer" to those concerned with the development and operation of mines," electrical engineer" to those who specialized in the generation and transmission of electrical currents, etc.

The engineering profession has now become subdivided into a great number of special branches, each with its own name, such as sanitary, municipal, hydraulic, chemical, architectural, refrigerating, illuminating, heating and ventilating, etc., and many of these branches have large and growing national societies of their own. A rigid scheme of classification of the several branches is difficult to make, since many of them overlap one another, but the following may serve as a tentative classification:

An engineer is one who has first studied the fundamental sciences that lie at the basis of all engineering, namely mathematics, drawing, physics, chemistry, mechanics, and the properties of materials of construction, and has afterward specialized in one of the three chief divisions of the engineering profession, which are defined below.

Civil Engineering.—Changing the earth's surface. Roads, streets, bridges, tunnels, foundations, masonry and metal structures, rivers, harbors, docks, railway permanent way, water-supply, sewerage, etc.

Mechanical Engineering.—Changing the shape and location of materials. The design, construction, installation and operation of machinery. The generation, transmission and utilization of power.

Electrical Engineering.—The study of electric currents and the design

and construction of machinery for generating, transmitting and using them. The electrical engineer is primarily a mechanical engineer, but his special field of electrical theory and design is usually not included in mechanical engineering.

The numerous other specialties in engineering are either subdivisions of one or other of these three, or else are combinations of selected parts of two or more of them, some of them also combining knowledge of other sciences and arts such as geology, chemistry and architecture.

Denoting the three main branches, civil, mechanical and electrical engineering respectively by the letters C., M., E., and geology, chemistry, bacteriology, etc., by abbreviations, we may construct the following list showing the relations of the several subdivisions and special branches of engineering to the main branches:

Mining.—C., M., E., Ch., Geol.
Chemical.—M., E., Ch.
Metallurgical.—M. E., Ch.
Hydraulic.—C., M.
Marine.—M.
Railway Civil.—C.
Railway Mechanical.—M.
Railway Electrical.—E.
Sanitary (San.).—C., M., Ch., Bact.
Municipal.—C., E., San.
Structural (Str).—C.
Concrete.—Str.
Heating and Ventilating (H.)—M.
Illuminating (Il.).—M., E., Ch.
Architectural.—Str., M., E., San., H. Il.
Refrigerating.—M.
Automobile.—M.

In addition to the specialization of engineering there has in recent years been a great expansion of its field. Formerly an engineer's chief work was finding how to do things with materials of construction and with the forces of nature. Now it is how to do things in a larger and better way, with greater economy of fuel and other material and of time and labor. Conservation of resources, saving of waste products, organization, system, and efficiency, are now the watchwords of the engineer. He has become a business man, a political economist. The new development has given rise to new definitions of engineering, such as "making one dollar do the work of two dollars," "overcoming the resistances of nature —including human nature," and to a new specialization by an as yet small group of consulting mechanical engineers who have been variously styled "efficiency" engineers and "scientific management" engineers. Their work has chiefly been in connection with factories, and it includes every economical problem of the factory, such as the selection and placing of machinery, the efficiency of its operation, the method of handling material, the investigation of methods of doing work, "motion study," compensation of the workmen, system of management, cost accounts, etc. (See XXXII, *Industrial Management.*)

CIVIL AND HYDRAULIC ENGINEERING

FRANK C. WIGHT

LICENSING ENGINEERS

During the past year there has been a nation-wide movement to license engineers. In several states bills have been introduced requiring anyone practicing engineering to pass an examination before an official board, which would be authorized to grant licenses to qualified persons. In most of these bills the present practice of engineering would be a sufficient qualification, but in future it is intended that the engineer be placed on the same basis as the doctor and the lawyer as regards official recognition. Some bills prescribed an annual license in addition to the original fee. Only two or three of such bills became law, and the opposition among the profession has been so great that it seems improbable that any general passage of such laws will prevail. The difficulty in establishing a criterion of ability, the necessity for an engineer to procure licenses in many states, and the hardship of an annual tax are the principal arguments against the requirement of licenses.

BRIDGES AND BUILDINGS

The Quebec Bridge.—The contract for the construction of the superstructure of the Quebec Bridge across the St. Lawrence, the largest and longest bridge in the world, was let on April 4 to the St. Lawrence Bridge Co., formed from two other Canadian companies especially for this contract. It is stated that the price is $8,650,000 and the time fixed for completion is Dec. 31, 1915. The design accepted was made by the company and is a slightly modified form of that prepared by the Board of Engineers. It is an 1,800-ft. span, the same as the old bridge which collapsed in Aug., 1907, made up of two cantilever arms, each 580 ft. long, and a suspended span 640 ft. long. The anchor arms are each 515 ft. long. The bridge will accommodate two railway tracks and sidewalks but will have no highway accommodations.

Masonry Arches.—The largest masonry arch in the United States, the 300-ft. reinforced-concrete Larimer Ave. bridge in Pittsburgh, Pa., is now under construction. This is 19 ft. longer in span than the record Monroe St. arch in Spokane, Wash.

The largest masonry arch in the world, the Ponte del Risorgimento across the Tiber at Rome, Italy, was opened for travel, May, 1911. This is a reinforced-concrete arch 328.1 ft. in span and 32.8 ft. in rise, providing a highway of 43 ft. and two 10½ ft. sidewalks. Aside from its immense span, it is remarkable for the extreme lightness of its design. Virtually, it is a cellular box having an 8 to 20 in. arch for its bottom plate and a 5-in. floor slab for its top, and with seven 8-in. vertical longitudinal walls tied together by transserve walls and beams.

Timber Bridges.—A very large timber bridge was built in 1911 for the Oregon-Washington R. R. & Navigation Co. across the Columbia River near Kennewick, Wash. This consists of nine 150-ft. trusses and one 240-ft. swing drawbridge, approached by nearly 1,000 ft. of trestle. The whole structure is of Douglas fir, and represents the very latest practice in timber design. It is the largest timber bridge ever built for railway traffic.

Woolworth Building.—The highest building in the world, to be called the Woolworth Building, was started in the spring of 1911, in New York city, on Broadway between Barclay Street and Park Place. The main building will be 155 by 200 ft. in plan and 30 stories high, and will be surmounted by a central tower, some 85 ft. square, rising 25 stories higher to a total height of 750 ft. It is of skeleton steel construction, founded, by means of compressed-air caissons, on solid rock 110 ft. below street level. Completion is expected by Oct. 1912.

RAILROADS

New Construction.—Although some thousands of miles of new railroad were built in the United States during the year, nearly all of it was continuations or double-tracking of existing lines. The Western Maryland Ry. has nearly completed its 87-mile Cumberland-Connellsville extension, which connects the two cities and opens up a new trans-Allegheny line from the Great Lakes to the Atlantic, giving the Western Maryland an entrance into Pittsburgh and the Lake district, and its connecting road, the New York Central Lines, a much easier route from Pittsburgh to New York City than at present. The Alaska copper mines were opened to railway communication by the completion in 1911 of the Copper River & Northwestern Ry., between Cordova and Kennicott, a distance of 197 miles. This road will ultimately extend to Fairbanks and the Yukon River. In Canada, railroad construction is much more active, owing to the vast amount of virgin territory to be opened. In Saskatchewan alone about 1,100 miles of new road was built and some 1,350 miles of new grading done. It is now reported that the Grand Trunk and Grand Trunk Pacific will complete their interoceanic lines in 1914, a year earlier than previously expected. The Grand Trunk Pacific will comprise, when complete, 1,805 miles from Moncton to Winnipeg (National Transcontinental, under construction), 793 miles

from Winnipeg to Edmonton (completed), 962 miles from Edmonton to Prince Rupert (under construction). The connection from Montreal to the main line will be completed by the time the above sections are ready for service.

Terminals.—The old Grand Central Station in New York City, which was built in 1871 and torn down in June, 1910, as a part of the improvements now going on toward a new terminal at the site of the old station, has been temporarily replaced by another station which will be used for about two years until the new work is completed. The new station will be the largest in the United States as the accompanying table of four large stations will show:

City.	No. of Tracks in Trainshed.	Platforms.		Width of Station or Trainshed.	Daily Number Scheduled Trains. (In & Out.)
		No.	Length in Feet.		
New York (Grand Central)					
Upper floor	42	16	16,415 total	820	422
Lower floor	22	17	14,380 "	578	57
Total	64	33	30,795 total	1,398	479
St. Louis (Union)	32	17	810 each	606	322
Washington (Union)	31	18	900–1,000 "	760	244
Chicago (C. & N. W.)	16	8	740– 840 "	320	300

The last noted station at Chicago was completed in 1911, and adds one more to the list of monumental terminals that the railways have recently been building in this country.

The smoke nuisance in railway terminals in large cities has attracted the attention of municipal authorities the past year, particularly in Chicago and Boston. In the former city a commission is at work studying remedies, which include the use of electric, compressed air or internal-combustion locomotives in yards, and in the latter city an order was issued requiring electrification of all lines within city limits by Sept., 1912. This order was vigorously opposed by the railways, who claimed that it was impossible from a financial standpoint, and it has been postponed for the action of the next legislature. (See also XI, *Municipal Government.*)

TUNNELS

Lötschberg.—The past year saw the completion of the famous Lötschberg tunnel through the Alps between Switzerland and Italy, the second longest double-track and the third longest tunnel in the world. The three large Alpine tunnels are the Simplon (single-track), 12-28 miles, the St. Gothard (double-track), 9.29 miles, and the Lötschberg (double-track), 9.04 miles. The construction of the latter was started in Oct., 1906, and it was holed through on March 31, 1911, and completed in Oct., 1911. On account of a fall of rock about two years ago, in which 25 workmen were killed, its alignment in the middle was changed and its length increased about half a mile.

Hoosac.—In this country the most notable event in tunnel operation was the equipment of the old Hoosac tunnel between New York and Massachusetts with electric propulsion. This tunnel was first projected before the Civil War, was started in 1855 and not completed until 1875, since which time trains have been drawn through it by the regular steam locomotives. On May 18, 1911, the first electric-drawn train passed through it. (See XXXII, *Electrical Engineering.*) It is a double-tracked tunnel nearly 5 miles long.

James Peak.—Recalling the state assistance to the Hoosac tunnel given nearly 50 years ago, was a bill introduced into the Colorado legislature this year, for the issuance of bonds to construct a 4-mile tunnel through James Peak near Denver, Colo., for

the use of the Denver, Northwestern & Pacific Ry., which found itself unable to finance this very necessary part of its system.

Highway Tunnels.—A novelty in tunnel construction, in the form of a highway tunnel, 70 ft. wide and 450 ft. long, was built this year on the line of the Newhall Road in Los Angeles Co., Cal. This materially reduced grades on a most important highway. In Boston the matter of a highway tunnel under water between Boston and East Boston was agitated but not brought to a head.

Chicago River.—In Chicago the rapid-transit tunnel on the line of La Salle St. under the Chicago River was completed. This is built in the same manner as the Detroit River Tunnel; viz., by sinking from the water surface caissons shaped to the tunnel section and brought together under water.

Water Supply Tunnels.—In water-supply tunnels, the large rock tunnels driven under the Buffalo River for the water-supply of the city of Buffalo were completed during the past year, and the work on the Los Angeles aqueduct tunnels and on those for the Catskill water-supply progressed favorably. In the latter the bore under the Hudson River, which is to carry the entire 500,000,000-gal. daily supply 1,200 ft. under the river surface and the distributing tunnel under the city proper were started. These city tunnels promise to be especially difficult on account of the great depth at which they are to be driven (700 ft. in places) and the uncertainty as to the occurrence of water inflow during construction. (See XX, *Water Supply.*)

SUBWAYS

New York.—During the past year no city in the United States has made any definite progress in subway building except New York, though the agitation for underground rapid-transit lines has been carried on in Philadelphia, Boston and Chicago. The New York subway situation took on a decidedly political hue and occasioned a controversy which is discussed in detail in another department of the YEAR BOOK (XX, *Public Services*). Under the decision finally reached, contracts were let for the construction of the Lexington Ave. branch of the Manhattan lines and construction was started in the summer. The Fourth Avenue subway in Brooklyn has progressed favorably during the past year, but little work has been done on the Center Street loop between the East River bridges or in connecting the Steinway tunnel, at 42d Street, under the East River, with existing lines.

Toronto.—On Nov. 1, the city of Toronto, Can., opened bids for the construction of a three-mile two-track subway to extend from the harbor front north to the city limits. These bids are to be used as a basis of actual cost from which to prepare a by-law authorizing the construction of the subway, which is to be submitted to the taxpayers for approval.

HIGHWAYS AND PAVEMENTS

Roads for Automobile Traffic.—The problem of building and maintaining a road for automobile traffic continues to engage the best efforts of the engineering profession, but as yet an effective and at the same time a reasonably cheap road has not been found. The various state road officials and the federal Bureau of Public Roads are building numerous stretches of experimental roads made up of different types of construction subjected to the same degree and kind of traffic and are observing their wear through extended periods. From these studies and from observations upon completed roads, the knowledge of road construction is being furthered. The various mixtures and applications of tars, asphalts and oils to the broken-stone macadam road promise the best results both in resisting the tearing action of automobile tires and in reducing the dust nuisance. A novel mixture of mineral oil and concrete is being experimented with as a road material and seems, in the limited tests available, to combine the resiliency of asphalt with the toughness of concrete. In some few sections, notably outside of the large cities where traffic is heavy, concrete and brick roads are being built. When of concrete, these

are either laid in mass or of small cubical blocks on a solid concrete base. As these solid roads are expensive and also hard on horses' hoofs, in some places they have been built over half the width of the road, the other half being of the softer and cheaper macadam or clay variety.

Administration.—In the administration of roads there is apparent a hopeful movement away from the old local system of road construction and maintenance, which is a relic of colonial days. In nearly all of the states there is now some state authority having more or less control of the main highways, and the tendency seems to be toward such a centralized system in more complete form. The old plan of each citizen working on the roads of his community for a specified time or paying a direct road tax is passing. At the same time it is being generally felt that the so-called "good roads movement" is at times over enthusiastic and that the policy of encumbering the state with long-time bonds for roads that are of necessity short-lived is ill-advised. The economic benefits to be derived from a good road are often exaggerated and cautious inquiry should be made into every proposed expenditure for this purpose. (See XIX, *Highways;* and XXII, *Agricultural Legislation.*)

WATERWAYS

Panama Canal.—On the Panama Canal the progress has been fully up to expectations. There seems to be no doubt that the canal will be opened as expected on Jan. 1, 1915. (See XIX, *Panama Canal.*)

New York State Barge Canal.—The work on the New York State Barge Canal has progressed evenly, but is still behind the stage anticipated in the estimates. It seems probable that the entire canal will not be complete until at least 1916. During 1911 the legislature passed a law authorizing a referendum vote of the people on a $19,800,000 bond issue to provide suitable terminals for the canal. This bond issue was authorized by the vote taken in Nov., 1911.

The Great Lakes to Gulf Waterway.—The report of the federal Board of Engineers appointed to investigate the desirability of the much exploited 14-ft. channel down the Mississippi from Lakes to Gulf, was made public in March, 1911. This report states emphatically that the most economical freight carrying canal barge is one drawing about 8½ ft. of water, so that the demanded 14-ft. channel would be uneconomical, particularly since it would not be deep enough for lake and ocean steamers. The board recommends, therefore, that only a 9-ft. channel be made in the Mississippi, since a larger one would not permit of any increase in traffic. In spite of the report, the "Lakes-to-Gulf" enthusiasts are unconvinced and still clamor for the expediture of the public funds on the 14-ft. channel. (See also XIX, *Waterways.*)

Cape Cod Canal.—The canal across the base of Cape Cod, which is being built by private enterprise, is progressing favorably and should be completed in 1912.

DAMS AND LEVEES

Controlling the Southern Colorado River.—South of Yuma, Ariz., the Colorado River flows for some 60 miles almost entirely in Mexican territory, along a ridge of its own formation over a large alluvial plane into the Gulf of California. Since about 1896, the rich Imperial Valley lying in the United States to the north of the river, and irrigated therefrom, has been subjected to a series of recurring floods, which have broken through the raised banks of the river and have covered, or threatened to cover, an immense area of cultivated land. In 1906-07 these breaks were so serious as to cause immediate emergency repair work to be undertaken by the Harriman railway lines, at the instance of the U. S. Government but with no specific official orders therefrom. These repairs proved successful for the time, but in 1909-10 another series of breaks threatened the valley, and at the urgent instance of the residents of the valley, Congress in June, 1910, placed $1,000,000 in the hands of the President for remedial purposes.

In Jan., 1911, the engineer appointed for the purpose started work toward a levee about 25 miles long to hold the river in its course and by June, 1911, $900,000 had been expended on this levee. It now appears that the levee as built is practically worthless in holding the river in its banks, and that the danger from an excessive rise in the river is just as great as it was before the work started. Incidentally, Congress has never reimbursed the Harriman interests for the work done in 1907, though urged to do so by two Presidents.

Damming the Mississippi.—A project for developing 200,000 to 300,000 horsepower, at the Des Moines Rapids of the Mississippi River by means of a dam across it from Keokuk, Ia., to Hamilton, Ill., is now being carried out after a number of years of preliminary exploiting. It will be completed about July, 1913. The power is to be gained by impounding the water behind a solid concrete dam 35 ft. high and nearly a mile long, and passing it through at first 15 but later 30 turbines, each directly connected with a 7,500 kw. dynamo, located in line along a 1,700-ft. power house. A lock for shipping will be provided along the Keokuk side.

The Austin Dam Failure.—On the afternoon of Sept. 30, the concrete dam of the Bayless Pulp and Paper Co. on Freemans Run, just above the small town of Austin, Pa., suddenly failed, and the lake behind it, some 40 ft. deep at the dam and half a mile long, swept down the valley, destroying the larger part of the village of Austin (1½ miles below) and much of the village of Costello (3 miles below Austin). Eighty-five lives were lost in the disaster. The dam was a solid concrete section about 540 ft. long and 50 ft. high, spanning a narrow defile through which the creek runs. From the previous history of the structure and from the condition of the wreckage, it is evident that the failure was due to the undermining of the dam by water percolating through the stratified, porous foundations. In Feb., 1910, the dam being then just completed, this percolation began to be evident and the dam cracked in several places and moved downstream from 11 to 18 in. The water was at that time removed from behind the dam and the owners were advised by the designing engineer that safety demanded the strengthening of the structure before allowing the lake again to fill up. In spite of this advice, no definite effort was made to strengthen the dam and within two months of the first partial failure, the water was again near the crest of the spillway. The leakage under the dam continued steadily and culminated in the failure of Sept. 30.

HARBORS

In no field of engineering is America so far behind Europe as in the construction and equipment of its harbors. This is due largely to the combination of public and private ownership of the wharfage rights and to the very general lack of public control of the harbors. As a result we have well dredged and charted channels, this being under the control of the U. S. Army Engineers Corps, leading up to poorly designed and equipped wharves and piers, which are rarely connected by any convenient system of transportation either to each other or to the railway terminals. There is evident in our cities an effort to establish some centralized harbor authority, which can control the construction of all harbor works and so arrange them in one general plan as to provide for the most advantageous movement of freight. In Boston, the past year has seen the establishment of such a commission, with an available $9,000,000 appropriation to start work. In New York the Dock Commissioner, acting under the limited authority granted him, has submitted to the Mayor a scheme for the better arrangement of the dock system there. (See XIX, *Docks, Wharves, and Water Fronts.*) Against the recommendation of the Chief of Engineers, U. S. A., the Secretary of War, on March 6, 1911, allowed the temporary extension of two piers in the North River to 1,000 ft., to provide for the berthing of the 882½-ft. *Olympic* and *Titanic* of the White

Star Line. This extension to 1,000 ft. has been persistently fought by the Army Engineers for a number of years on the ground that the fairway of the river (2,730 ft.) is already too small for the proper operation of the largest ocean steamers.

WATER SUPPLY

New Projects.—No city of size in this country has initiated any great project in its water supply during the past year, though a number have under construction various water-purification plants. The two large schemes which are now under construction, the new 500,000,000 gal. per day Catskill system for New York City and the 250,000,000 gal. system for Los Angeles progressed favorably, but both are far from completion. (See under *Tunnels, supra.*)

Water Shortage.—Owing to the prolonged drought of the summer of 1911, which came at the end of two extremely dry years, there has been much trouble with water shortage. American cities are notably extravagant with water, and although records show conclusively that the installation of water meters serves materially to reduce the waste of water without restricting its proper use, it is very difficult in most cities to overcome official inertia to the extent of having meters universally used. It has so happened that during the summer of 1911 many cities have found it necessary to call attention to the lack of a sufficient supply and to start measures toward saving what supply existed.

New York City.—In New York City especially did this condition exist. The present supply for the city, taken from the Croton River watershed, was at one time within two months of exhaustion. Studies were made for the construction of an emergency supply from the Ten-Mile River, which rises in New York State and flows into Connecticut, where it serves as power for mills, but the danger of interstate litigation over water rights prevented its immediate projection. (See XX, *Water Supply.*)

Purification.—While the developments of the past few years have disproved the old notion that a pure water supply is the only safeguard needed for a city's immunity against typhoid fever, and have shown that the milk and food supply as well as general hygienic conditions must also be looked after, the growth of public water supply purification plants has been most marked. (See XVIII, *Public Health and Hygiene.*) Recently reported long-time tests by Dr. Houston, Chief Chemist of the Metropolitan Water Board of London, Eng., have confirmed his previous conviction that storage in a still reservoir is the best possible bacteria remover for a polluted water. He states that from 14 to 20 days' storage is sufficient to remove all pathogenic bacteria from the most polluted supply. Since, however, in a large city, so long a storage would require enormous and costly reservoirs, it is generally necessary to provide some different method of purification, either the slow sand filter or the mechanical filter, depending upon local conditions. Each of these methods acts both as a clarifying and as a purifying agent, though absolute sterilization is not accomplished by either. In Europe there has recently been a movement toward the absolute disinfection or sterilization of the water, which has progressed much farther than in this country.

Sterilization.—The two general methods of sterilization or disinfection practiced are by the application of hypochlorite of lime or by treatment with electrically produced ozone. In the first method, the chemical is introduced into the water supply just before it enters the storage reservoir in about 18 parts to the million of water and has proved most effective in destroying bacteria. Its obvious advantage is the ease with which it can be applied and the rapidity with which an emergency plant may be installed on discovery of an unexpected source of pollution. For this reason it has been applied very extensively in American water supplies, either as an emergency protection against imminent epidemic or as a temporary expedient pend-

ing the construction of the more reliable filtration systems. The ozone treatment requires a special apparatus, several of which are on the market. It consists in the mixture of ozone, a derivative of oxygen formed by treating air with electricity, with the polluted water. It is somewhat more expensive than other methods of treatment, but has proved quite effective in Europe. In Paris and St. Petersburg, especially, extensive plants have been built during the past year. In this country it has not passed beyond the experimental stage.

A third method of sterilization recently studied, is by passing water under the ultra-violet rays which alone pass through a quartz glass from a mercury-arc lamp. These rays have a remarkably destructive effect on all bacterial life, but so far the process has proved very expensive. (See XX, *Water Supply;* and XXVIII, *Sanitary Chemistry.*)

SEWAGE DISPOSAL

The Imhoff Tank.—The most important development at present in sewage disposal is the Imhoff tank, which has been in use for some years in Germany and upon which several sets of experiments were made in this country during the past year. If raw sewage be placed in a closed tank, it undergoes septic action, that is, it rots, due to the activities of certain bacteria and a solid, more or less non-putresicible deposit separates from a relatively clear liquor, which must then be filtered or otherwise treated to procure complete bacterial purification. In an older application of this phenomenon, known as the "septic tank," the sludge was allowed to be stirred up by the gases of decomposition, and the consequent effluent was not always clear or inoffensive. The novel advantages claimed for the Imhoff tank are that the sewage has time to settle thoroughly, and thus deposit all solids, that the solids are automatically removed without stirring up the sludge, that the sewage does not come in contact with the decomposing sludge or the gases engendered, and that the sludge becomes so thoroughly rotted as to be quite inoffensive. The construction of a plant using this tank was started in 1911, at Atlanta, Ga. (See also XX, *Sewage Disposal;* and XXVIII, *Sanitary Chemistry.*)

CONCRETE

Materials.—The use of Portland-cement concrete in all structural work is increasing regularly. During 1910 there was manufactured in the United States 76,000,000 bbl. of Portland cement, and the estimate for 1911 bids fair to surpass this. In 1887 only 250,000 bbl. was manufactured, a fair measure of the growth of the industry. Not only has the cement industry flourished, but the call for broken stone and sand, the other constitutents of concrete, has been equally strong, so that improved methods of producing these materials have become necessary. During the past summer the 50-year-old broken-stone quarry at Tomkins Cove, on the Hudson River some 30 miles above New York City, placed in operation a modern stone-producing plant, turning out 8,000 cu. yd. of broken stone daily instead of the old 2,400-yd. production.

Building Construction.—There have been no record-breaking structures during the past year, but the application of the material to buildings has been very general. Especially for factories, where fire protection combined with cleanliness and light are so necessary, concrete is being used in increasing quantity. For residences, the same increase cannot be recorded, although there is a wide use here. There has been an idea that a concrete residence could be built cheaply, but experience has shown that for high-class buildings this is not true, and that, although a concrete house is fireproof, it must be expensively built to be sightly. The widely exploited Edison poured house, which was to reduce the cost of workingmen's homes to an absurdly low figure, has not materialized, nor does it seem probable that it will. There have been, however, numerous applications of interchange-

able metal forms to small house construction that have had more than a passing success, and there seems to be a reasonable hope that a class of structure of this type may be developed that will be cheap, serviceable and pleasing in form.

Building Codes.—Although an effort has been made in various technical societies, there is not as yet any general building code entirely satisfactory in its provisions relating to concrete structures. The cities individually move slowly in this matter, and as a result there is much dissatisfaction among builders who are restricted by municipal provisions.

Electrolytic Corrosion.—There has been at least one notable instance during the past year of the destruction of the members of a reinforced-concrete building by electrolysis, and considerable study is now being made into this phenomenon. In the case in question, a packing house having rooms with a very moist atmosphere, it appeared that the lighting current became short circuited through defective wire insulation to the wet concrete, through that to the slightly embedded steel, along that to an exit through the concrete to another wire with defective insulation. Where the current left the steel, electrolytic corrosion was set up and the gradually expanding rust ripped off the encasing concrete. Many thousands of feet of beams and columns were so affected, though none to the point of failure. It is felt, however, that careful arrangement and protection of the electric circuit will prevent any such action, but the danger in the building under observation was so obvious that great attention will now be paid to all electrical construction in reinforced-concrete work. (See XXII, *Electrochemistry.*)

Durability.—There was torn down this year in Baltimore a large reinforced-concrete building seven years old to make way for a larger structure. The difficulty in removing the framework and the very obvious integrity of the members did much to raise the reputation of the material in the estimation of the building public.

RAISING THE "MAINE"

The wreck of the U. S. battleship "Maine," which was sunk in Havana harbor on Feb. 15, 1898, is being raised by the Engineer Corps of the U. S. Army, under various acts of Congress appropriating in all $650,000. After a preliminary study of numerous schemes, the board of officers appointed for this work decided to enclose the wreck in a watertight cofferdam, which could be pumped empty, laying the wreck dry on the harbor bottom, its disposition to be decided upon when its precise structural condition could be known. The dam adopted was unique in design, an elliptical enclosure 395 ft. long and 216 ft. wide, made up of a series of 40 and 50 ft. cylinders, each in turn composed of a series of interlocking steel piles driven to a depth of 73 ft. through soft mud to a solid bottom. Each cylinder was filled to the top with hard clay pumped and dredged from the harbor, the whole forming a solid wall. The wreck lies in about 35 ft. of water, on a soft bottom into which it has sunk so that its lowest plate is about 48 ft. below the surface.

Actual work of driving the piles was started Dec. 6, 1910, and the last closure was made March 31, 1911. The filling of the cylinders was completed in May and emptying the cofferdam begun soon after. Owing to the dangerous movements in the dam under the water pressure which soon developed, it was decided to dump 8,000 cu. yd. of stone riprap against the inside half perimeters of the cylinders to strengthen them. By successive stages the dam was emptied 22 ft. below water surface by July 26, to which elevation it was found that the riprap had forced the interior mud. Further progress then consisted in the removal of this mud and the separating of the tangled parts of the wreck by a gas flame. The appropriation was exhausted in this work by Jan. 1, 1912, and Congress is to be asked for an additional $250,000 to complete the removal of the hulk.

The wreck was found to be in two parts, the after third intact and the forward two-thirds either completely

destroyed or so shattered as to be hardly recognizable. It will be impossible to recover the vessel, though the after third may be bulkheaded and floated. It seems probable that a separate removal of small pieces is all that can be expected for the expenditure of $900,000. The scattered and unidentified remains of perhaps two score sailors were recovered and removed to Arlington cemetery near Washington.

In December an inspection of the wreck was completed by a board of army and navy engineers appointed to investigate the cause of the disaster. They reported on Dec. 8 to Secretary of the Navy Meyer that the "Maine" was destroyed by an external explosion.

ELECTRICAL ENGINEERING

T. Commerford Martin

CENTRAL STATION STATISTICS

The latest authentic central-station statistics for the United States are those of April, 1911, which show a total of 5,718 private and municipal systems; with 445 in Canada, 67 in Mexico, 7 in the West Indies, and 2 in the Republic of Panama. Of these plants, 3,935 supplied alternating current only. The number of plants using water power wholly or in part was 1,267. The number supplying steam for heating was 258; and the number reporting the manufacture of ice was 218. No fewer than 3,689 carried stock of electrical supplies. The investment was placed at $1,800,000,000, and the gross earnings at about $350,000,000. Many plants reported gains in excess of 20 per cent., but the palm may safely be accorded to the Detroit Edison Co. with 52 per cent. Its monthly output of electrical energy increased from 7,181,430 kw-hr. in Sept., 1909, to 10,932,000 kw.-hr. in Sept., 1910—a gain of 51.6 per cent. Of both these amounts about 2,000,000 kw-hr. were sold to the local railway company. A figure to match this is furnished by the Duluth Edison Electric Co., where with a population of 80,000 and 14,000 houses, no fewer than 12,000 of the houses, or more than 85 per cent., are customers on the circuits. This was 2,000 more than the water connections and 5,000 more than the gas.

LIGHTING

Tungsten Lamps.—During the year the tungsten-filament incandescent lamp found larger adoption than ever, in a wider range of sizes and candle-power. The principal improvement would appear to be in the introduction of the "wire type" tungsten filament, in which there is one continuous length throughout the convolutions within the lamp, from one leading-in wire to the other. The filament is wound on supporting anchors so as to be free to move within them and is connected to the leading-in wires by flexible joints. Tests indicate that the drawn tungsten wire is less brittle at every stage than are pressed filaments. Another advantage is that the drawn wire affords a wider range of sizes suitable for use.

Street Lighting.—A notable feature has been the general introduction of tungsten street lighting, more especially in connection with what is known as the ornamental post system, where large arc lamps on high poles or standards have been replaced by groups of incandescent lamps in frosted globes on low posts, usually three or five lamps to the post. Up to the middle of 1911, no fewer than 80 American cities had adopted the new method for prominent streets or considerable districts, one of the latest being Atlanta, Ga., where the system embraces 13,000 street ft. with 239 ornamental posts, each standard carrying five 100-watt tungsten lamps incased in outer opal globes. (See X, *Public Services.*)

Factory Lighting.—Another feature of the year has been the attention devoted to the problems of industrial lighting in factories, as one example of which may be mentioned

the installation within a period of 18 months of over 7,000 tungsten lamps in ten acres of floor space in one of the largest factories in Pittsburgh.

Quartz Tubes.—Among the lamps of recent years have been the vacuum type with a mercury or other vapor emitting light when electrified. These have been improved by the use of quartz for the tubes, with a life of 2,000 hr., and an economy of one-quarter to one-third watt per candle. The neon tube lamp is a relatively recent comer, and most of the data about it are found in a French Academy paper by G. Claude, who has worked on it. Additions of foreign gases to the neon gas in the tube must be carefully avoided, it appears, since a few per cent. only of nitrogen are sufficient to reduce the luminous output very essentially. The light of the neon tube is rich in red rays and thus forms the counterpart of the mercury-vapor lamp. The inventor's neon tube has a length of 19½ ft. between electrodes and a diameter of 1¾ in. The potential difference at the terminals of the tube is 1,000 volts and is almost independent of the current, decreasing from 1,100 volts to 980 volts when the current is raised from 0.1 amp. to 1 amp. With a potential difference of 1,000 volts and a current of 0.94 amp. the effective power is 850 watts, the power-factor being 0.9. The tube gives 220 c. p. per metre (or 67 c. p. per ft.), or 1,320 c. p. for its total length, corresponding to a specific consumption of 0.64 watt per c. p. This does not include the losses in inductance coil and transformer. If these are included the specific consumption is 0.8 watt per c. p. The inventor hopes to reduce this to 0.5 watt per c. p. Prof. J. Blondin states that the neon tube lamp has passed the laboratory stage, and that several neon tubes were employed successfully last year side by side with nitrogen-vapor tubes for exterior illumination at the Paris Automobile Show.

HEATING AND COOKING

Great advances have been made in the perfection and introduction of electric heating and cooking appliances. It is estimated that in 1910 no fewer than 250,000 electric flat-irons were sold in the United States and Canada, and a larger number last year, with a ratio of irons to number of residence customers of 25 per cent. The average income to the central station from these is about 65 cents, or 6 kw-hr. of current. The electric heating pad has also come into extensive use in many cities, as at Dayton, O. In larger work of the kind may be mentioned the equipment of laundries. Electric soldering irons are another requirement in the metal trades, and one installation is reported of 12 irons of a total capacity of 3,120 watts, using 500 kw.-hr. per month. Typical electrical printing binderies with embossing machines, melting pots, kettles for wax, glue pots, tables, grids and tools may now be found in St. Louis, Albany, New York, Philadelphia, Boston, Washington and other cities. Electrically heated hosiery-drying forms have been introduced in Philadelphia. In the hat trade, many new devices have been adopted for the electrical flanging, curling and finishing of stiff hats, the ironing, velouring and flanging of soft felt hats, and the blocking and finishing of straw hats. A new electrical device for singeing the nap of felt hats has replaced the gasoline torches used formerly, improving hygienic conditions, and reducing fire risk.

Other novel uses are reported. One central-station company is supplying current to 22 electric furnaces, with an aggregate demand of 7,500 kilowatts. Another innovation is the electric vat drier for brewers during the vat varnishing season. These are in large demand, and replace charcoal fires and other objectionable methods employed previously. Domestic refrigeration outfits are required, driven by electric motor, and one manufacturer reports 170 outfits of one-quarter ton each for residences, sold in New Jersey and the vicinity of New York City. Of electric vacuum-cleaning equipments the output is even larger, and thousands of these appliances have been put in service with unvarying success.

All such apparatus bring nearer the solution of the "servant girl" question, for there remains practically no department of domestic work that is beyond electrical treatment. It is significant that during the year, the U. S. Navy, after careful tests on electrical bake ovens and ranges, compared with the coal-burning type, has adopted them for all the new battleships. All the kitchen problems ashore cannot be settled quite so definitely, but progress has been made. A special type of range has been introduced successfully by the Cleveland, O., Electric Illuminating Co., which is a combination of a "storage-heating oven" with the hot plates and the radiant broiler of an ordinary electric range. The oven bakes and roasts, and cooks most of the vegetables required; the hot plates are designed for auxiliary use for frying and boiling. It is easily used by the absolutely "green" servant girl. About 30 of these outfits were in use last year, and the average monthly bill per person, at a rate of 5c. per kw. hr., varies from $4.13 with a family of two to $0.81 with a family of eleven. A family of eight averages $1.41. An average of four families, of five persons each, gives monthly bill of $2.54 per person.

ELECTRICITY IN RURAL DISTRICTS

Among the notable advances of the year has been the growing application of electricity in various forms to agriculture and to the rural districts generally, where many incidental industries are carried on not related directely to farm produce. In many instances such developments are due to the extension of power-transmission lines, which, in passing from the generating source to some distant city, cross over large rural areas where electrical energy can also be used to advantage. For example, the Manhattan, Kan., Light, Ice & Power Company has among its customers two grist mills of 130 and 150 h. p., a cold-storage plant of 60 h. p., an alfalfa mill of 75 h. p. and a planing mill of 40 h. p. The Northern Colorado Power Co. has a number of customers to whose motors it supplies current for pumping and irrigation purposes. The operation of grain elevators by electric power is another successful innovation. Several of the cross-country trolley lines have taken up the supply of electricity to the farmer. The Grand Junction & Grand Valley system in Colorado, for example, traverses a fine fruit belt, and supplies many orchards at an average rate of 12½ cents per kw-hr.

TRACTION

Electric Railway Statistics.—The latest statistics of electric street and interurban systems in the United States were those published in Aug., 1911, for the year, showing 1,279 systems with 40,088 miles of track, 89,601 cars and a total outstanding capitalization of $4,682,106,217. With gross earnings of about $5,000 per car, as shown in the Census figures of 1907, the total income in 1910 would be about $450,000,000, but it is probably about $500,000,000 as the returns of the larger companies that make their earnings public gave a total for them of not less than $479,000,000. Large as such figures may appear, they seem small when it is stated by the Public Service Commission of New York City that each inhabitant of Manhattan Island pays for electric transportation annually no less a sum than $16.35.

Freight Traffic.—While there has not been so active a development of interurban trolleys during the year, much has been done to intensify the service of the existing roads, particularly in handling freight of the lighter character. The milk traffic has grown enormously. The Indiana Union Traction Co., of Anderson, now handles about 400 cans daily. The third-rail Aurora, Elgin & Chicago Railroad hauls 200,000 cans a year, with a maximum haul of about 40 miles, and a rate of 15 cents per can between any two points on the system. One trolley road delivers more than 1,000 ten-gallon cans daily into Cleveland, O. Ten years ago the Detroit, Mich., United Railway Co. carried into the city an average of 100 cans daily. The number now

runs to 1,500, and at certain seasons 2,000. (See XXV, *Trade, Transportation, and Communication.*)

Express Traffic.—In like manner express business has been built up, especially in coöperation with express companies. The Illinois Traction System operates a solid train of five to seven cars, known as the "high-ball express," by which goods for points as far east as Danville, 223 miles from St. Louis, leaving at midnight are delivered next morning. The Electric Package Co. covers 700 miles of interurban road in northwestern Ohio around Cleveland. It handles little material at less than 30 cents per 100 lb., and does not bother with low-grade commodities. Several roads, however, go in for heavy freight to and from the cities they reach. The Tacoma Railway & Power Co. has switches into 15 wood yards, 6 lumber yards, 2 sawmills, 2 packing houses and 2 coal yards. Many interurban systems are now handling freight in bulk for the farmers, and for the year ending June, 1911, the Illinois Traction System handled 27,180 such freight trains. Between Indianapolis and Louisville there is operated a "berry train" during the fruit season, and this is typical of many other similar services for ice, vegetables, tobacco, etc.

Trunk Lines.—The year has witnessed some notable extensions in the use of electricity on main lines of railroad. The electrification of the Hoosac tunnel of the Boston & Maine Railroad included the equipment of 12.31 miles of track and the use of six locomotives, each of a rating of 1,500 h. p., running at 50 miles an hour for passenger trains and 30 for freight. Single-phase current is used. The steam locomotives are hauled through with banked fires. Block signals were not feasible before on account of smoke, but have now been installed, and the capacity of the tunnel, which is 4.75 miles long, has been doubled. (See *supra, Civil Engineering.*) The Rock Island & Southern Railroad has begun its electric service with single-phase current at 11,000 volts; and the New York, Westchester & Boston line is being equipped in similar manner. The Piedmont Traction system in North and South Carolina is the longest railroad scheme of electrification yet attempted; it comprises over 280 miles of track, for the operation of which 1,500-volt motors, direct-current, are being installed. The New York, New Haven & Hartford has extended its electric zone and service, and the Southern Pacific has equipped its extensive Alameda-Berkeley division of 120 miles of track with 13,200-volt transmission lines transforming to 1,200 volts direct-current for service, with lattice steel poles and catenary construction. Running speed up to 45 miles an hour is made. The new Cambridge Subway in Boston is to cost $8,000,000, connecting with Harvard Square in Cambridge from Park Street in eight minutes. In general it may be said that a leading feature of the year has been the resort to high-voltage direct-current for track use, with interpole motors, by many lines, including the Fort Dodge, Des Moines & Southern, and the Milwaukee Electric Railway & Light Co. A number of steam railroads have also installed combination gasoline-electric cars, the St. Louis & San Francisco Railroad system using six 70-foot cars.

TELEPHONY

Statistics.—The statistics published for the Bell telephone system last March for the year 1910 give a fair idea of the growth of the industry, these figures representing probably not less than two-thirds of the totals for the whole art in the United States. There were 5,882,719 stations in the system, an increase of 740,027 for the year; and of these 1,852,051 were operated under sub-contract by local, coöperative, and rural independent companies or associations of farmers. The total mileage of wire in use was 11,642,212. The total of exchange connections—or conversations—daily was 21,681,471, and toll connections, 602,539. The number of employees was 120,311. The requirements for new plant in 1911 were about $60,000,000, and the additions to plant during the eleven years from 1900

was $460,755,700. The gross revenue collected from the public in 1910 was $165,600,000, an increase of $16,000,000 over the previous year. The surplus or net available was $51,000,000, of which $11,550,000 was paid in interest and $25,000,000 in dividends. The total capitalization, including intercompany items and duplications, was $1,114,310,979. The cost per exchange station was $117.12, or, including the toll lines, $142.13. The total outstanding obligations of the Bell system in the United States are $580,000,000, and the book value of the property representing these obligations is $696,700,000. Statistics are not available as to the "independent" growth, but it is claimed to be not much less, and the systems gave many evidences of activity. (See XXV, *Telegraphs and Telephones.*)

News Service.—In October, the telephonic news service so long in vogue at Budapest, Hungary, was put in operation at Newark, N. J., and if financially successful there is to be introduced in other large American cities. A schedule of news transmission is carried out for the day, of which each subscriber is advised, but it can be broken into by any special item. The day begins with cable and telegraphic dispatches and opening prices of the Stock Exchange, theatrical notes and social gossip, and the early evening is graced with instrumental music and recitations for the young people; to which in the later hours succeed vaudeville features and orchestral music until 1 a. m. To enjoy any or all or none is at the subscriber's option. Other features are included, such as sermons on Sunday direct from the pulpit, and plays hot from the stage.

Long-Distance Circuits.—Practical telephonic service has been pushed during the year to Denver, which is now in regular communication with New York City, the distance being almost 2,000 miles. This result is accomplished with the aid of Pupin "loading coils" in the cables, and the coils have been so improved as to add 40 or 50 per cent. to the carrying capacity of long-distance lines. To prevent a recurrence of the conditions of March 4, 1909, when Washington, D. C., was cut off completely because of the breakage of all wires in a fierce storm, an underground telephone cable has been laid from Philadelphia to the capital, passing through Wilmington, Del., a distance of 135 miles. The longest previous wholly underground line was 90 miles between New York and Philadelphia.

Train Dispatching. — Telephonic train dispatching has made great headway. The Canadian Pacific, which already had 2,254 miles of track equipped with telephones, made plans to equip another 2,000 miles this year. On the Illinois Central Railroad the telegraph has been supplanted by the telephone for train orders over 2,000 miles of the system.

New Applications.—A novel departure of the year was the appointment of women telephone-traffic inspectors by the up-state Public Service Commission of New York, with power to alter all operating exchanges and report on necessary improvements in operating practice and methods. Another unusual experience has been the use of buoy telephones for submarines. These were strikingly tested when a German submarine sank in January in Kiel harbor. The telephone buoy float was released at once automatically and rose to the surface. The life-saving crew made connection, got into communication with the captain of the craft, preparations for raising were made, and in three hours the craft was at the surface again, all well. During the year novel special loud-speaking types of telephones have been introduced for train-annunciator purposes at railway stations, and for public transmission of music, etc.

TELEGRAPHY

Statistics.—Little has occurred during the year worthy of special mention, outside the development of wireless. The statistics of the art show a gain, but it is slight compared with that in other branches. The Western Union report issued in Oct. showed an increase of 1,403

miles of pole line and 58,296 miles of wire, of which all but 15,214 miles were copper, implying a great improvement in operating conditions. There was an increase of $3,018,964 in gross revenue, or 9.57 per cent.; but a decrease of $148,889 in net. The "night letter" service inaugurated by the telegraph companies last year was developed in a "day letter" service of kindred character. "Experience has shown the revenue from the 'day letter' to be a substantial one, while the revenue from other forms of telegraphic service is not materially affected thereby." (See XXV, *Telegraphs and Telephones.*)

Submarine Cables.—In submarine cabling, an important development of the year was the agreement on Sept. 29 of the Anglo-American and Direct United States Cable Companies, in London, to lease their lines to the Western Union Telegraph Co. for a period of 99 years, and the last-named company has been reimbursed nearly $3,500,000, the cost of the new Bay Roberts cable. On March 6, the laying of a cable between Monrovia, Liberia, and Pernambuco, Brazil, was begun. This cable is the last link in the separate system which connects Germany directly with South America.

Wireless Telegraphy.—The rapid advance of wireless telegraphy is noteworthy. Practically every vessel in the navies of the great nations now has its equipment. In 1907, the mercantile craft with Marconi equipment numbered 140, but at the beginning of 1911 the number had reached 510. The Telefunken system of Germany made 106 installations in 1910, bringing the number of its plants up to nearly 1,000, of which about 500 are on warships and 100 are portable military sets. In February one of the leading Marconi patents was sustained in England, said to control the entire principle of wireless tuning. It was reported during the summer that wireless signals emanating from Japan had been picked up by towers on the Californian coast. The experiments at Brant Rock, Mass., carried on for two years past under the supervision of the Navy Department, have resulted in the decision to construct three or four steel towers 450 ft. high at Fort Myer, Washington, D. C., as the land base of the naval system, giving a radius of at least 1,500 miles. Many improvements have been made generally in wireless apparatus. In the sending plant, freedom from interference is secured in two ways; first, by sending out well-sustained trains of waves of one definite frequency, thus permitting sharper tuning; and, secondly, by giving the signals a high musical pitch, easily distinguished. In the receiving apparatus, filing coherers have virtually disappeared, and the reception of the signals is always aural. Magnetic, electrolytic and valve detectors are now in use. One of the most recent developments is the introduction of a telephonic relay between the detector and the telephone receiver, giving tone augmentation to faint signals otherwise quite inaudible. Major G. O. Squier, of the U. S. Signal Corps, has brought forward a most ingenious system of applying wireless methods to existing telegraph and telephone lines, involving the feasibility of multiplexing the lines.

ELECTRICITY IN MINING

The utilization of water power electrically has stimulated many mining districts and saved others. Such a plant at Galena, Ill., is now supplying the lead and zinc industry in a Wisconsin region of over 200 sq. miles of hilly and rough country where fuel difficulties would be almost insuperable. In coal mining the same adoption of electricity is seen. In Pennsylvania alone, the tonnage of coal cut by electric mining machines in 1903 was only 18,000,000. By 1909 it had risen to over 31,000,000 tons, and is now estimated at 40,000,000. In coal-crushing work, a 200-h. p. motor-driven crusher at the U. S. Coal & Coke Mine, Gary, W. Va,. delivered under test, 262 tons of crushed coal per hr. within guaranteed conditions. A novel mining application is that in the Moose Mountain iron beds of Ontario, Can., where magnetic ore of a high grade is picked up and loaded into cars by electromagnets. Not less than 800

lb. of magnetite, and often more, can be picked up at a lift. The density and hardness of the ore destroyed the buckets rapidly when steam shovels were used. Another advantage is that the magnets allow to slip away a quantity of mere stone broken up with the ore in its native bed. (See XXII, *Mining and Ore Dressing.*)

AUTOMOBILES

The increasing use of the electric automobile may be judged from the fact that in March, Cleveland, O., reported 1,800 electric in use, or one battery-propelled vehicle for every three gasoline. Chicago at that time had 2,400, but the proportion to population was much less. The total value of American electric pleasure vehicles in use is placed at $42,000,000, and of commercial vehicles at $11,000,000. The output in 1909 was 3,639 vehicles, having a value of $6,564,500, and one of the manufacturers reports a gain of 45 per cent. in 1910 over 1909, and a further gain of 54 per cent. to Aug., 1911. An interesting novelty is the battery truck crane which cuts down appreciably the enormous cost of handling package freight. With this, 600,000 lb. of cotton has been moved half a mile in one day, the machine taking 24 bales at one load, and making a round trip every 12 minutes. In handling canned salmon, a truck crane with two trailers has moved 1,000,000 lb. 600 ft. in 19 hr. To make a complete and authentic demonstration of the electric, the Edison Co. of Boston has this year established a fine garage operated under the supervision of the Garage Committee of the Electric Vehicle Association of America, accommodating 20 to 30 vehicles owned by the public. The capacity of the garage is already taxed to the limit, and has raised the standard of garage service in an area of 550 sq. miles.

ELECTROCHEMISTRY

The progress of the past year has embraced both of the allied arts of electrochemistry and electrometallurgy, although Europe remains greatly in the lead in them. The success of the two electric 15-ton steel-refining furnaces, working with Bessemer converter at South Chicago and with open hearth at Worcester, has led the U. S. Steel Corporation to acquire complete control of the process for this country. Work is also being done in reduction of pig iron from iron ore in Shasta County, California, and in Sweden and Norway. At a meeting in Chicago in January, Prof. C. F. Burgess, of the University of Wisconsin, exhibited a block of iron deposited electrolytically. This cathode weighed 75 lb., and was 2 in. thick. It was deposited from a mixed solution of ferrous sulphate and ammonium chloride containing 40 gr. of iron to the litre, and using a current of from 6 to 10 amp. per sq. ft. at 1-volt potential. He said that such electrolytic iron, comparing well with high-grade Swedish, could be produced commercially at $55 per ton. It is stated that more than 100 electric metal furnaces are in use in America and Europe, ranging in capacity from 100 pounds to 15 tons. Great activity is noted in furnaces and processes for the fixation of atmospheric nitrogen, and 100,000 h. p. is being applied for the purpose. A plant of 4,000 h. p. is proposed by interests affiliated with the Southern Power Company in North Carolina for the production of nitrates through electric discharges in air. At Niagara Falls, the calcium-cyanamide works are making successfully a new fertilizer, in which the nitrogen is combined with calcium carbide at a high temperature; the fertilizing effect being due to the formation of urea from the cyanamide in the soil. The tendency is also noted of New England paper and pulp mills to make electrically their own chlorine and caustic. Liquid chlorine is also being made by several companies. The largest use is in the recovery of tin from scrap for the manufacture of tin tetrachloride to be used in the silk industry. (See also XXVIII, *Electrochemistry.*)

MISCELLANEOUS PROGRESS

The U. S. Census office issued during the year a statement as to the production of electrical machinery

and supplies in 1909. The report gave a total of 1,255 establishments, with product valued at $246,000,000. Of this value, about $16,000,000 represented dynamo-electric machinery, and $11,000,000 motors; $8,800,000 transformers for light and power; $4,680,000 storage batteries; $6,000,000 primary batteries; $14,000,000 incandescent lamps; $15,500,000 telephone apparatus; $2,000,000 telegraph apparatus; $50,000,000 insulated wires and cables; $7,800,000 electrical measuring instruments; $2,000,000 electric heating and cooking apparatus; $6,000,000 magneto ignition apparatus for automobiles; $5,000,000 electric conduits; $1,110,000 electric therapeutic apparatus.

Last summer the Chilian government awarded a contract for two submarine boats to the Electric Boat Co. of New York to cost about $1,000,000, to be built at Seattle and to proceed to Chili under their own power. The German government is understood to have bought Edison storage batteries for use on its submarines. The New Orleans Railway & Light Co. found a new outlet for current in supplying some 40 chicken incubators for customers, ranging from a 70-egg domestic outfit to a 3,000-egg equipment for a commission merchant. A popular novelty is the porcelain ware made under a German patent, the outside surface being electrically plated with metal. "Sun-kissed" California oranges owe their golden tint to the exposure of the fruit to steam vapor. Electric heat is now employed to a large extent in producing the steam vapor, coils immersed in open tanks of water producing the warm humidity required to give the final complexion to this orange of commerce. To several large smelting plants in California the principle of precipitating the gases and suspended particles by electrical discharge has been successfully applied. This protects adjacent fruit districts. (See also XXIII, *Copper.*)

MECHANICAL ENGINEERING

Wm. T. Magruder

Some eighty years ago engineering was defined as the utilization of the forces of nature for the benefit of mankind. This was before the days of Stephenson's locomotive, the steam fire engine, the screw propeller, the modern machine tool, the fancy loom, and those other machines which have been invented in more recent years, and which have caused the twentieth century to excel its predecessors in engineering wonders and achievements. Mechanical engineering is the engineering of dynamics and motion, as civil engineering is the engineering of statics and rest. It is the branch of the profession which has to do with machinery, either in the form of prime movers, and their application to electricity and to locomotion, or in the form of machinery, tools and appliances for adapting the power generated by the prime mover to the work to be performed. In fact, wherever power is to be generated, or motion enters into an engineering problem, or manufacturing is to be done, there is the field for the mechanical engineer.

The restlessness of the age is continually demanding improvements. In the field of mechanical engineering, these have manifested themselves during the past year in a continued demand for standardization and interchangeability of present constructions, economy of first cost, higher speeds, larger outputs, and better materials. One branch of the profession naturally reacts upon the others and for the benefit of all. This can best be illustrated by the influence of the work of the automobile engineer upon that of his brothers in the profession of mechanical engineering. His call for stronger, tougher, and more durable and reliable materials which would enable him to drive his motor cars at higher speeds, and with less danger of serious accident, has caused the metallurgical engineer to compound the alloy steels and the various bronze

and aluminum alloys for the benefit of the automobile trade, which have been found to be equally useful in other branches of engineering. Similarly, the demands for higher speeds and lower frictional resistances have caused the introduction of ball bearings and of roller bearings, not only into motor-car construction, but into machine-tool construction, and even for such household articles as coffee grinders and carpet sweepers. The money which has been available, estimated to be at least $240,000,000 per annum, spent in the purchase of motor cars and their accessories, has made possible the solution of the same problem in other lines of engineering business. In fact, from a monetary point of view, the manufacture of automobiles and their accessories, to say nothing of their operation, is one of the largest manufacturing industries in this country, and one whose size and importance, few appreciate. Some little idea of the size of it may be gathered from the following statement which, of course, is but approximate. There were about 700,000 motor cars, including pleasure vehicles, motor trucks and wagons, licensed by the different states in 1911, of which possibly 200,000 have been built within a year. Estimating the selling price of these to have averaged $1,200, at the very least, it will be seen that the cash invested by the owners of these machines amounts to over $840,000,000, of which $240,000,000 was probably spent during the past year. This large expenditure has necessarily reacted, not only upon business generally, but on all branches of manufacturing. (See also XXXII, *Automobiles.*)

STEAM POWER

Comparative Economy of Engine and Turbine.—The competition between the reciprocating steam engine and the steam turbine continues. The advantages of the latter as to lower first cost, smaller space required, less lubrication demanded, ease and continuity of operation, smaller cost of maintenance, and larger units possible, are being more generally appreciated by both owners and operators of power plants. The best results for steam consumption have been obtained by municipal pumping stations, where the reciprocating engine still seems to have the field to itself. Duties of upward of 175,000,000 ft.-lb. per million B.t.u. have been obtained, corresponding to efficiencies of 22½ per cent. and economy of 189 B.t.u. per h. p. per min. However, even in this field, the turbine-driven centrifugal pump threatens the supremacy of the high-duty reciprocating pumping engine on account of its compactness and low first cost, especially where special uses can be found for the exhaust steam.

In the generation of electricity, the best results in steam consumption for reciprocating steam engines have been obtained by the engine built by the Sulzer Bros. for the Moabite Station in Berlin. There a kw. of electric current has been delivered at the switchboard for one hour for 13.35 lb. of steam at 202.7 lb. steam pressure, superheated 223° F., and expanded to 28 in. of vacuum. Similarly, for electric steam-turbine plants, the best results in steam consumption also come from Germany, where at the Rummelsberg Station a kw. of electric current has been delivered at the switchboard for one hour for the expenditure of 11.77 lb. of steam, having a pressure of 198.5 lb. gauge pressure, superheated 272° F., and expanded to 29.32 in. of vacuum. This corresponds to 257 B.t.u. per kw. per min., or to 191 B.t.u. per h. p. per min., and to a combined efficiency of 22 per cent. Better results than these have been said to have been obtained, but they are of doubtful authority.

Steam Turbines.—In the Oct., 1911, issue of *The Electric Journal*, references are made to proposed installations of steam turbines each one to be of 30,000 to 50,000 kw. capacity. In the smaller power stations as well as in the larger ones, there is an increasing use for steam turbines in sizes below 500 h. p., not only as prime movers, but to drive the auxiliaries of the main engines, such as circulating pumps, hot-well pumps, and boiler-feed pumps. In fact, when space is considered, the high-speed

turbine direct-connected to a centrifugal or turbine pump, designed to accommodate the speed of the turbine, seems to have a particular field of its own. The same is true for other high-speed machinery, such as fans and blowers.

As the efficiency of any heat engine is proportional to the range of temperatures between which its working fluid is used, it will be seen that the higher the initial temperature and the smaller the lower temperature, the greater will be the efficiency of the engine. The former can be obtained by the use either of steam at high pressure or, better yet, of a superheater; the latter can be obtained by the use of a condenser for a steam plant and the lowest possible vacuum. The steam turbine, on account of its smaller size and higher speed, lends itself to use with a condenser, and hence is preferably and economically used as a condensing unit. For this reason, it is being introduced for use in connection with reciprocating steam engines and other sources of low-pressure steam. This can best be illustrated by the use of low-pressure steam turbines in connection with high-pressure, non-condensing, reciprocating steam engines, not only in electrical power plants on land, but also for the propulsion of our fastest trans-Atlantic steamers, such as the *Olympic* of the White Star Line. It has also been proposed to use the low-pressure steam turbine in connection with large gas engines, utilizing the heat of the exhaust gases from the gas engine further to heat the jacket water of the gas engine in special boilers, and to use the steam so generated in a condensing turbine. This scheme has been agitated by the Westinghouse Machine Co. in this country (*Power*, April 11, 1911), and was the subject of a paper before the Manchester Association of Engineers in Feb., 1911. It is estimated that an additional gain of 12 per cent. of power can be so obtained.

Tesla Steam Turbine.—Within the past few months a steam turbine has been tested at the Waterside Station of the New York Edison Co., which was designed by Nikola Tesla, of alternating current fame. This machine is said to be made of 25 discs of tempered steel, 18 in. diameter, 1/32-in. thick, secured to a shaft so as to make a rotor 3½ in. wide. Steam being directed on to the rim of these discs passes from the nozzle along a spiral curve to the exhaust openings which are near the center of the discs. The force of the expanding steam developed by adhesion and viscosity causes rotation.

It is stated that a machine 20 in. by 35 in. by 5 ft. high, using steam at 175 lb. pressure and exhausting into the atmosphere, will deliver 200 h. p. at 9,000 r. p. m., and will use 38 lb. of steam per h. p. per hr. Mr. Tesla states that, with superheated steam and high vacuum, the steam consumption will be reduced to 12 lb. The present machine is said to weigh about 400 lb., or 2 lb. per h. p. The inventor claims that this will be greatly reduced in future designs; and also that the same principle can be used for an internal-combustion engine. (*Elect. Rev.*, Sept. 9, 1911; *West. Elect.*, Sept. 9, 1911; *Sci. Am.*, Sept. 30, 1911; *Eng. News*, Oct. 12, 1911.)

Steam Engines.—The competition created by the steam turbine has caused further development of the reciprocating steam engine through the introduction of the Lentz and Stumpf designs. Their prime objects are the reduction of the clearance and condensation losses, resulting in decreasing the steam consumption to from 8.5 to 11 lb. of steam per h. p. per hr. (*Power*, July 12, 1910, and Jan. 31, 1911.) The former is obtained in the Lentz engine by the use of poppet valves located obliquely in the cylinder corners. The Lentz compound engines are short and compact and have few parts and but one head between the high and low pressure cylinders, so dispensing with one gland. The straight-flow principle of the Stumpf engine has much to commend it. It has double poppet inlet valves in the cylinder heads and exhaust ports located at the center of the cylinder, and a long piston travels far enough to uncover the ports at the proper time as is customary in two-cycle gas-engine work. It has been suggested that the principles of their designs may

be beneficially applied to American locomotive practice, in which line the steam turbine has apparently not yet found a place.

Steam Boilers: Detroit Edison Plant.—The most notable progress which has been made in the installation of steam boilers is the one made at the Detroit Edison Co. by Alex. Dow, the general manager. Three boilers have been erected and tested; the fourth and fifth boilers are now being erected; and it is expected that the installation of ten boilers will be completed within the next two years. Each of these boilers has 23,654 sq. ft. of heating surface, is rated at 2,365 h. p., and is required to carry a day load of 6,000 kw. and an evening load of from 7,000 to 8,000 kw. The experience of several months has proved this to be good practice. They are provided with superheaters for supplying 150° of superheat. They are of the Stirling type of water-tube boiler, and consist of three upper drums and two lower drums. One of the boilers is fitted with Roney stokers having 446 sq. ft. of grate surface; and one with Taylor stokers having 405 sq. ft. of grate surface. The width of the furnace is 26½ ft. and its depth is 14 ft. From the dumping grates to the top of the first baffle is 29 ft. This large furnace volume combined with a particular form and height of the furnace had much to do with obtaining the efficiencies which, on test, ran from 80 per cent. at slightly below the rating to about 76 per cent. at double rating. In obtaining these efficiencies, the steam used for driving the stokers and for producing the forced blast was not deducted from the total steam generated by the boiler. The Roney stokers use about 1½ per cent. of the total steam generated by the boiler, and the Taylor stokers, about 2½ to 3 per cent. Four Roney stokers are used in the furnace; two being at the front and two at the rear of the boiler. There is a low division wall between the two stokers and a bridge wall between the two sets of stokers. The boiler fitted with Taylor stokers has 13 retorts on each side, set in a continuous row so as to provide an unbroken fire surface from one side of the boiler to the other. Some idea of the size of these boilers may be obtained from the statement that they are each 31 ft. long, 29 ft. wide and 44 ft. high, occupy about 16 cu. ft. of circumscribing space per rated h. p., and are from two to three times the capacity of the largest boilers heretofore used, with possibly a very few exceptions.

In the *Journal* of the American Society of Mechanical Engineers for Nov., 1911, Dr. D. S. Jacobus, advisory engineer of the Babcock & Wilcox Co., presents a paper giving the details and the logs of the tests recently made by him and the representatives of the Detroit Edison Co. on two of these boilers, one fitted with Roney stokers and the other with Taylor stokers. Some idea of the magnitude of these tests may be obtained from the statement that they required that the boiler room of this large power plant be under the control of the observers for nearly three months, and for six weeks over 50 men worked in eight-hour shifts, night and day, exclusively on these tests.

Surface Combustion.—Combustion is the combination of two chemical substances with the generation of heat. The production of flame is not necessary for combustion. Hydrogen and oxygen, when mixed in their combining proportions, begin to unite slowly and with no sign of flame at 500° C. In fact, the generation of steam can be detected after a few days if the temperature has exceeded 450° C., although the true stage of combination is reached only at 550° C., when self-heating begins and the rate of combustion increases until the ignition temperature is reached. If, however, the gases are brought into contact with certain bodies, such as porous porcelain, fireclay, platinum and certain other metals, the rate of combustion is increased. For many years it has been known that a stream of hydrogen gas playing upon platinum at 100° C. will cause it to glow and thus ignite the gas. This phenomenon is known as "activation." If a combustible mixture of two gases be injected into a source of heat at a temperature greater

than that required for their combustion, they will not only ignite and give off heat and flame, but, if one of the bodies, or the activating surface, is in an incandescent state, the mixture experiences activation, the combustion of the gases takes place more quickly, greater heat is generated in a given time, and the flame is absent. The heat generated keeps the activating surface at incandescent temperature and the potential energy of the gaseous mixture is converted into radiant heat.

Dr. W. A. Bone, Livesey Professor of Applied Chemistry, in the University of Leeds, England, has spent several years in the scientific investigation of this phenomenon, and read a paper before the Royal Institution in London last spring. It was reported in the *Engineer* and in *Engineering* for April 14, 1911. He calls the phenomenon "surface combustion," for the reason that the combustion is limited to a depth not exceeding one-eighth of an inch of the porous fireclay plate through which the gas and air are forced. Surface combustion is being advocated not only for metallurgical work, but for the heating of the air of rooms, for the heating and evaporating of liquids, in many chemical industries, and also for the generation of heat in steam boilers. A special boiler has been built in Leeds to test the practicality of the application of the principle to the generation of steam. The experimental boiler was a shell boiler, about 10 ft. in diameter, and about 3 ft. long, containing 3-in. tubes packed with fragments of firebrick to baffle the gases and into which the gaseous mixture of air and town gas was injected through a nozzle at the rate of 100 cub. ft. of gas per tube per hr. at a pressure of 17.3 in. of water. In 20 minutes from starting, 100 lb. of steam pressure had been generated at 337° F. Nine hundred and ninety-six cub. ft. of standard gas of 562 B.t.u. heating value evaporated 450.3 lb. of water per hr. from 42° F. and at 337° F., which is the equivalent of 550 lb. of water evaporated per hr. from and at 212° F. The evaporation was 21.6 lb. of water per sq. ft. of heating surface and the efficiency was 94.3 per cent. When forced so as to evaporate 32 lb. of water per square foot of heating surface, its efficiency was reduced to 91 per cent. The loss by radiation was two per cent., the balance of the heat being carried off by the waste gases, which consisted of 10.7 per cent. carbon dioxide, 1.6 per cent. oxygen, and 87.7 per cent. nitrogen, showing that there were no unburnt gases. The gas and air must be either forced to the boiler or the burnt gases sucked from the boiler by mechanical means. It is estimated that this will require four per cent. of the power of the boiler. Sixty-five per cent. of the total evaporation took place in the first foot of length, 25 per cent. in the second foot, and only 10 per cent. in the third and last foot. The reason for this increase in evaporation seems to be due to the use of radiant heat and the absence of a film of air adhering to the tubes. It will be noted that this boiler requires no setting and uses mechanical draft rather than a chimney; that instead of having tubes 16 to 18 ft. long, they need be but three feet long, and that evaporating from two to five times as many pounds of water per sq. ft. of heating surface per hr., as is commonly done by ordinary steam boilers, it may be made correspondingly smaller; and having an efficiency of upward of 90 per cent. instead of from 60 to 80 per cent., as is customary, it will use from 10 to 35 per cent. less fuel. If the Radiant Heating Co., Ltd., of Armley, Leeds, England, can succeed in building boilers of large size which shall be proportionately as successful as they are small, efficient and effective, this application of Dr. Bone's scientific investigation of the phenomenon of surface combustion will prove one of the most important advances in mechanical engineering reported for the year.

Condensers.—The demand of steam turbines has been for better condensing appliances, ones in which the steam and air from the turbine would be most completely brought to the lowest temperature possible for the temperature of the circulating or injection water. This means either the

intimate mingling of the steam and air with the injection water, or intimate contact with the condensing surfaces, so as to reduce the size of the machine for a given capacity. With the demand for increased powers, the surface condensers have so increased that they have become very much larger than the steam turbines which they serve. In fact, the efficient operation of the condenser has not infrequently been a more serious problem than the operation of the steam turbine. Where suitable water is obtainable a jet condenser may be satisfactorily used and the injection water caused to come into intimate contact and mingle with the steam and air from the engine or turbine. With the introduction of the counter-flow system of jet condensers, much space in crowded power houses has been saved. Water is introduced into an extended trough or pan in their upper corner, along which it flows and from which it overflows through numerous short tubes and also at the edge, falling into a second and similar pan provided with similar overflow pipes, and finally falling into the lower part of the shell and flowing thence to the barometric column, or to the centrifugal or other type of pump, serving to overcome the atmospheric pressure. The steam enters through an opening at the bottom of the opposite end, passes horizontally across through the shower of water, ascends to the second level, passes horizontally through the upper shower, and finally all that is left of the steam vapor, together with the air and other gases, pass horizontally to the other end and over the entering and coldest water at the top and so to the suction outlet to the rotative dry vacuum pump. A uniform velocity is maintained by continuously diminishing the passage traversed by the steam as it is continuously reduced by condensation. It will thus be seen that the air leaves the condenser just after being in contact with the coldest water and, therefore, its temperature is reduced as greatly as possible. The breaking up of the current of water into finely divided streams through which the exhaust steam and air are forced to pass, causes the injection water to present the largest condensing surface, and thereby work with good efficiency. In one test with the barometer indicating 29.9 in., the vacuum was 28.55 in. of mercury, corresponding to a temperature of 88.5° F.

GAS POWER

Gas and Oil Engines.—In the field of the internal-combustion motor there has been this year a reversion to the Diesel oil engine for units from 50 h. p. upwards, and also an increasing demand for all engines operating at lower compression pressures. Not only is economy of cost of fuel obtained, but also the highest efficiencies for heat engines have been obtained by oil engines. On account, therefore, of their efficiency being from two to three times that of steam engines, their friends predict for them a large future in those portions of the country where oil can be obtained at reasonable prices. But it is not only in the line of oil engines that there seems to be a great future for the internal-combustion engine, but also in connection with the suction gas-producer, including those of low powers.

Gas Producers.—Within the past year, suction gas-producers have been put into operation in units from 25 to 500 h. p. A notable exhibition was recently made at the Irrigation Exposition at Madison Square Garden, New York City, where the use of gas and electric power for the pumping of water for irrigation purposes was demonstrated by the installation and operation of a 25 h. p. Smith producer, using anthracite fuel, and driving a 25 h. p. Nash gas engine, direct-connected to a 15 kw. electric generator, the current from which was transmitted to a high-speed electric motor, direct-connected to a centrifugal pump which sucked water from an imaginary river and forced it up to an elevation and delivered it to imaginary irrigation ditches.

Marine Gas Engines.—Gas producers and engines have been used to propel ships on both the ocean and the Great Lakes. One ship has already crossed the Atlantic under oil-

power, and others are being built for the Hamburg-American Line, each of which will have two Diesel oil engines, of 1,500 brake h. p. when making 120 r. p. m. They are expected to use one-half a pound of oil per brake h. p. per hr., and will occupy one-half the space required for a steam equipment of equal power. (*Eng'g*, April 4, 1911.) More recently offers were made to deliver suction gas-producers in units of 2,500 h. p. of nominal capacity, and capable of gasifying 3,500 pounds of coal per hr. If these prove successful, still larger units will probably follow.

WATER POWER

Three water turbines, each of 15,000 h. p., are being installed in the plant of the Toronto Power Co. at Niagara Falls, in addition to the 97,000 h. p. already installed there. Notwithstanding the size of these units, their power is exceeded by many others in California and Washington, two of which have capacities of 22,500 h. p. Furthermore, it is to be noted that these newer water turbines are extremely efficient, results as high as 91.7 per cent. having been reported. The runners of these large wheels are usually made in one casting, sometimes of cast iron, 30,000 lb. in weight, but not infrequently of a hard bronze. In certain installations, working under high pressures, they have been tested under 600 lb. hydrostatic pressure per square inch.

STEAM LOCOMOTIVES

One branch of mechanical engineering in which all Americans are greatly interested is that of locomotion, for they, as a rule, travel more than do the peoples of other countries. Locomotion by automobiles and aeroplanes is dealt with in subsequent sections, and the electrification of railroads is dealt with in the section "Electric Engineering." The advances which have been made in these parallel lines of locomotion on land have called for corresponding advances in steam locomotion. As a result, good bridges and rails have been replaced by stronger and heavier ones so as to permit locomotives weighing, with tender, 425 tons to displace those weighing from 100 to 250 tons. In recent years the distinctively American type of locomotive, with four driving wheels and a four-wheel truck in front, has been replaced by the Atlantic type, in which the eight wheels of the American locomotive have been supplemented by a two-wheel trailing truck. Similarly, the Atlantic type has been augmented by an additional pair of driving wheels to form the Pacific type of locomotive, some of which weigh, with tender, almost 200 tons. For passenger work the diameters of the driving wheels range from 70 to 80 in. The working pressures seldom go above 220 lb.

The Mountain-Type Locomotive.—The Mountain type of locomotive has one four-wheeled forward truck and one two-wheeled trailing truck, and four pairs of drivers in between, and thus differs from the Pacific type in the same way that the latter differs from the American type. As introduced this year on the Chesapeake & Ohio Railway in the mountain district of Virginia, Mountain-type locomotives have hauled trains of 12 steel cars over a 14-mile grade, 75 ft. to the mile, at an average speed of 25 miles per hr., including many stops. This they are capable of doing as their weight on the drivers, and therefore, tractive force, is almost double that of the locomotives of the Pacific type, the total weight of the engine and tender being 250 tons, instead of 175 tons for the Pacific type. Besides a larger heating surface, the Mountain-type locomotive has 845 sq. ft. of superheating surface; the capacity of its tender is 9,000 gal.; and its grate area is 66.7 sq. ft., as compared with 47 sq. ft. of grate area for the Pacific type. It is estimated that this engine, in taking a train of 4,200 tons over a continuous grade of 15 ft. to the mile at an average speed of 23½ miles per hour, developed 2,480 h. p., on the basis of a resistance of three pounds per ton for the cars. This is said to be the largest power developed by a locomotive since the days of the Strong locomotive. (See *American Engineer and Railroad Journal* for Oct., 1911.)

Mallet Locomotives.—For freight service, the ten-wheeled freight locomotives are now being replaced by Mallet articulated compound locomotives with feed-water heaters and superheaters attached. The Atchison, Topeka & Santa Fé Railroad has been the pioneer in the more advanced and original experimentation in locomotive engineering, and has introduced new designs of fireboxes, feed-water heaters, superheaters and re-heaters. One of the largest of these Mallet locomotives uses oil as fuel, generates steam at 220 lb. pressure, uses it in cylinders 26 in. and 38 in. by 34 in., has a weight on the driving wheels of 206 tons and a total weight of engine and tender of 350 tons, and a tractive force of 96,000 lb. Among the most novel Mallet locomotives may be cited those recently delivered to the Southern Pacific Co., which use oil for fuel, have the tender at the smoke-box end of the locomotive and the cab at the opposite and forward end. The object of this is to permit the engineer to have a clear view of the track, especially when rounding curves and passing through tunnels and snow sheds. One of the 230-ton articulated compound locomotives used on the Baltimore & Ohio Railroad has a maximum tractive force, when operated as a simple engine, of 126,000 lb. (*American Engr. & Railroad Journal*, May and Nov., 1910; June, July and Sept., 1911; *Railway Age Gazette*, Aug. 12, Sept. 9, Dec. 23, 1910; June 16, Aug. 18, Sept. 29, 1911; *Railway & Eng'g Review*, Dec. 10, Dec. 24, 1910; May 13, July 8, Sept. 16, Oct. 21, 1911; *Railway & Locomotive Engineering*, July and Oct., 1910; May, June, July and Nov., 1911.)

A Mallet locomotive on the Atchison, Topeka & Santa Fé Railroad has a total weight of 425 tons, two leading wheels, two trailing wheels and two sets of five pairs of driving wheels, and a tractive force of 111,000 lb. when operated as a compound engine.

Superheaters.—It is interesting to note the increasingly large number of locomotives now under construction which are to have superheaters, and that the Canadian Pacific Railway leads the list in number ordered. (*American Engineer and Railway Journal*, June, 1911.)

Stokers.—In order to operate these large locomotives with coal, it has become necessary to supplement the muscular energy of the fireman with mechanical stokers and conveying machinery. Several railroads seem to think that their latest designs will prove satisfactory.

Wind Resistance.—The effect of wind resistance at high speed, even in freight service, is well known and is shown by the additional time required to get over the line with an opposing wind. This has recently been measured quantitatively with a motor car on the Union Pacific Railroad, where with a wedge-shaped or pointed front-end 23 gal. of gasolene were required as compared with 32¼ gal. with a blunt-ended car to traverse 80 miles between Beatrice and Lincoln in 117 min. at the rate of 41 miles per hour, being at the rates of 3.48 and 2.48 miles per gal. of gasolene, respectively.

Welding.—Among the larger economies effected in railroad repair work in recent years are those due to the introduction of the newer welding processes, whereby savings of 50 per cent. are quite common, and 90 per cent. are not rare.

VENTILATION

Tunnels.—In the operation of railroads the use of the ventilating fan in long tunnels has proved highly successful and economical. Previous to the installation of the ventilating fans at the Elkhorn tunnel on the Norfolk & Western Railway, it required from 17 to 55 min. to clear the tunnel of smoke, and there was an increase of temperature of 30° after the passage of a train. In the four years preceding the installation of the ventilating fans, 26 men were asphyxiated in the tunnel. After its installation smoke would appear at the portal two minutes ahead of the train and the tunnel was clear of smoke and steam within a minute after the engine had passed out. As a result, the trains can follow each other more rapidly, and it has be-

come possible to increase the load about 100 tons per train, thereby saving four trains per day on a run of 11 miles, which represents a net saving of $17,000 per annum, to say nothing of the comfort to employees and passengers and the saving of lives. In one of the more recent installations made by the Pennsylvania Railway Company, in one of the tunnels under the city of Baltimore, 4,963 ft. long, two fans have been installed, one of which is for emergency use, each of which has a capacity of 450,000 cu. ft. of air per min. The air will pass through the tunnel at a velocity of 12 miles per hr. or in 4¾ min. Each of these fans with its electric motor and driving mechanism measures 18 ft. long, 14 ft. wide and 15½ ft. high, while its impeller is 10½ ft. in diameter and breadth.

Buildings.—The successful operation of the modern office building is largely due to the use of elevators for the transportation of passengers, and of fans for the heating and ventilating of the rooms. Without the former, the height of buildings would be limited to four or six stories; and without the latter, the inside rooms and all sub-basements below the upper one would be uninhabitable. Now, however, one building is under construction having 55 stories above ground and 26 elevators. Besides the necessity of heating and ventilating the building, modern practice requires that the air shall be washed, dried and properly humidified, and, in certain cases, also medicated with healing vapors. Not only are office buildings and hotels supplied with mechanical ventilation and heating systems, but also most of the large textile works and many of our manufacturing establishments. In the former, humidification is necessary for the manufacturing process; and in both, ventilation is desirable on account of the larger output of the operatives. (*Engineering Review*, Nov., 1911; and *Heating and Ventilating Magazine*, Oct., 1911.)

Mechanical ventilation is becoming more and more common for the drying of dyed goods, as well as of other materials from which moisture must be taken and which must be treated at low temperatures.

REFRIGERATION

During the past year the lines of proper demarcation for the use of compression and absorption refrigerating machinery have been more accurately drawn, and now seem to depend upon the steam pressure carried and the uses available for low-pressure steam. The fact that moist gas is more susceptible and responsive to the influence of heat has been made use of in the greater operation of ammonia-compressor refrigerating machines with wet gas than with superheated or dry gas, and also in the improved system of operating the freezing tanks flooded with liquid ammonia rather than with dry gas, as it has been proven conclusively that there is greater heat transmission from the salt brine liquid on the outside of the ammonia pipe to the ammonia liquor inside than if the ammonia pipes are filled with dry gas. This has been accompanied by a corresponding increase in capacity for the same length of pipe, or heat-absorbing surface, or the possibility of doing a certain amount of work with less area of heat-absorbing surface.

The past year has noted the introduction, in increasing numbers, of mechanical refrigerating machines in small units, using other refrigerating fluids than ammonia.

The progress of refrigeration can best be noted by the statement that 30 years ago mechanical refrigeration was commercially unknown, whereas to-day, not only is ice most generally made artificially, and cold-storage warehouses provided for meats and produce, but also that the rooms of factories where certain processes are carried on, such as those of the Eastman Kodak Co., are regularly refrigerated in order that it may be possible to manufacture the output in the warm months. Refrigeration has been successfully applied to the removal of the moisture of the atmosphere in many places, including, and on a large scale, the air supplied to blast furnaces. It would seem that it would be only a matter of a few years before refrigeration will be applied to the air supplied in summer to office buildings and hotels in the same way that heat is applied to air in winter time, and

that men of means will in summer no more think of sitting in a moist atmosphere at a temperature above 90° than they would think of sitting in winter in an atmosphere whose temperature was below 50°.

LUBRICATION

Progress in lubrication of machinery during the past year has been marked by a tendency on the part of some of the more progressive corporations to get away from the trade-mark brands of lubricants and to purchase on specification, thus getting what they pay for and paying for what they get. This has been the plan adopted by the United States government with respect to fuels and many other kinds of supplies, and is being advocated very generally as a matter of scientific management, economic efficiency and good business sense. There are still, however, numerous corporations who, though quite progressive in certain directions, still continue to use special brands and to pay prices from 50 to 150 per cent. larger. A few of the large corporations, whose bill for lubricants amounts to many thousands of dollars per annum, employ men whose sole duty is to look after lubrication, reduce friction, introduce economies, stop leaks and wastage, and keep a record of the cost and consumption of lubricants and of the metals of both bearings and journals in the various plants. It has been shown that a competent man can save his salary several times per annum. Continuous oiling systems with storage tanks and filters mark the progress in the lubrication of large stationary engines, compressors, and refrigerating machinery. The prejudice which exists against the heavy gravity oils made from southwestern and mid-continental crude oils is slowly being overcome and these oils are coming into somewhat less restricted use.

MACHINE TOOLS

In the design of machine tools much progress has been made in meeting the demands for tools capable of removing the greatest amount of metal with the greatest accuracy in the least time. This demands higher-powered machines of maximum rigidity, minimum friction, greatest length of life, and ease in operation. It has been made possible by the use of high-speed steels, which have been generally adopted for all machine-tool cutting operations.

Gearing.—One of the greatest problems with which machine-tool designers and builders have had to cope has been the strength of the teeth of gearing. The tremendous output demanded requires a large input of power. Successfully to transmit this power through the change gears of machine tools at modern speeds has demanded a new material, as cast iron can no longer be used successfully for this purpose. Experiments have shown that while soft steel gears are better able to withstand the shock and jar than are cast-iron gears, their wearing quality, even when flooded with oil, is far below that for cast iron. In gear trains in which hardened and soft steel gears intermesh, while the wear is much reduced, it is still great and the soft gear has practically a very short life as compared with the hardened gear. Further experiments with hardened gears have met with perfect success and vanadium and chrome-nickel and other alloy steels are now being introduced. These metals have an elastic limit of from 200,000 to 240,000 lb. after heat treatment, and an ultimate tensile strength several thousand pounds higher. The scleroscope test shows the desired hardness. As a result of the introduction of these materials, larger powers can be transmitted for longer periods with the same or less wear. The introduction of the continuous-flow and force-feed systems of lubrication has increased the efficiency of the bearings of machine tools several hundred per cent. over the efficiency of bearings lubricated semi-occasionally with an oil can. By these advances, the cost of maintenance and the delays due to breakages and hot bearings have been greatly diminished, if not eliminated.

Speed Variation.—The importance of having gear teeth of adequate strength is seen in the greatly increased number of speeds available on all recently designed machines.

In fact, the present demand is for variable-speed countershafts and for speed indicators which will permit the operator to determine at a glance whether his machine is being run at the proper speed for the work. These two recent improvements illustrate the influence that the advances which have been made in the design and manufacture of motor cars has had upon the design and manufacture of machine tools in general. Another interesting example of this same influence is the introduction of a multiple disc clutch interposed between the main driving shaft and the primary speed-change device, and the use of a brake so that one lever causes the engagement of one and the disengagement of the other. Furthermore, the safety of the operator has received more careful attention, all counterweights and gearing are entirely encased and crank handles on rapidly moving power-operated parts have been eliminated. In a recent 42-in. vertical turret lathe these features seem to have been obtained, together with many others which space will not permit us to detail. (For a description of this and other large up-to-date machine tools, see *Machinery*, June, 1911.)

Pulleys and Belts.—Among the less important details of machine construction may be noted new uses for cork inserts in pulleys and clutches, and the use of pulleys and other parts made of aluminum, so as to reduce their inertia, on those machine tools, such as planers, where these parts are frequently reversed. Steel belts as made in Berlin and used in Germany have not yet been commercially introduced into this country.

CONVEYING MACHINERY

Freight Handling at Docks and Terminals.—James J. Hill states that the present inefficiency of transportation in the United States is due to inadequate terminal facilities, and that the pressure upon existing terminals is a present menace and a future handicap; that the efficiency of a transportation system is limited not by its carrying capacity but by its terminal facilities; and that the essential factor in transportation costs is not the cost of hauling goods but the expense of loading and unloading and of handling at the terminal stations; that the present inefficiency is due to congestion in the yards and terminals. In *The Engineering Magazine* for April, 1911, H. McL. Harding suggests a solution of the problem of handling freight mechanically at terminals by combining the overhead travelling trolley for lineal movement with the travelling shop crane for the serving of areas. At the January meeting of the American Society of Mechanical Engineers, Samuel B. Fowler gave a more extended treatment of the telpherage system. The solution of the terminal problem resolves itself into two factors—the increase in capacity and the reduction of terminal costs. Capacity must be increased not by the extension of area or by the increasing of the speed and number of hand truckers, but by increasing the unit movement by handling larger loads at greater speed. This necessitates the use of machinery, which would affect the capacity of a terminal by releasing space now reserved for trucking, rapid removal of goods, the ability to tier incoming freight, use of both sides of sheds, use of more than one story for storage, and the loading and unloading of teams by machinery. As to the effect on costs, one man operating the transporting machine should be able to replace at least sixteen truckers.

The same problem has been engaging the British in their large projects for the extension of dock facilities in the port of London. An abstract of the report of "the Port of London Authority" is published in *Engineering* for Feb. 3, 1911.

The Germans seem to have actually done more than the Anglo-Saxons in the solution of the problem of the rapid unloading, transportation and re-loading at docks and yards of freight to and from vehicles, ships and cars. This will be seen by a perusal of a book recently published, *The Port of Hamburg*, published by Yale University, which gives the results of several years of study of the German methods of solving this mechanical-engineering problem in conveying machinery.

AUTOMOBILES

COKER F. CLARKSON

Commercial Vehicles.—In the last few years half a million automobiles of the pleasure type have been made in the United States. In the next few years we shall make a half million commercial motor cars. The manufacture and use of pleasure cars, demonstrating the practicability of the self-propelled vehicle, is simply the preliminary step toward the manufacture of cars to do the world's trucking. The mechanical means of heavy truck service are now at hand. The disappearance of the horse only awaits the scientific carrying out of manufacturing details and the application by sane sales methods of mechanical haulage to the enormous and diverse road traffic.

The average haul of wheat to shipping points is 9.4 miles; the average weight, 3,323 pounds. The cost of this haulage to the farmer is $2.86 per load; cost per ton-mile, 19 cents. The average haul for cotton is 1.8 miles; the average load, 1,072 pounds; $2.76 per load, 27 cents per ton-mile. Horse haulage cost rises as the distance increases, whereas in the case of motor haulage it decreases. The motor truck, with its space-covering advantages, amply justifies its use in simplifying the distribution of farm products, even if it could do nothing in reducing haulage costs, which it is also fitted to do greatly. Thus the improvement of roads is almost a matter of self-preservation in rural communities.

During April, 1911, a five-ton truck made 24 trips from New York City to Newark, N. J., carrying 255,804 pounds of merchandise; a little over 5½ tons per load. Two to four trips per day were made, the average running time for the distance one way, 23.6 miles, being 130 minutes.

Reliability.—Generally speaking, not many years ago it was considered impossible to build a self-propelled vehicle for common roads, that could be operated continuously in a practical way, because of the very high cost of upkeep. A large part of this excessive maintenance cost was due to breaking or bending of the various parts of the machine. With improved design in mechanical parts and the introduction of high-grade alloy steels, together with anti-friction bearings wherever practicable, the automobile has been transformed from an uncouth and unreliable mechanism to one of the most perfect and reliable machines in use.

Standardization.—As the result of the work of the Society of Automobile Engineers described in the YEAR BOOK for 1910, the number of steel-tubing sizes necessary for motor-car construction has been reduced from 1,600 to about a hundred, and the number of lock-washers from 600 to 28.

The Automobile Industry.—An increase of $190,000,000 in the value of automobile products in the United States in the decade from 1899 to 1909, and a gain from 57 to 316 in the number of automobile factories, indicates the wonderful development of this industry. These figures are from a preliminary report of the Director of the Census on automobile manufacturing in this country as shown in the thirteenth census. The value of the product in 1899 was about $5,000,000, and 1909, $194,722,600. The figures show that Michigan produces about 45 per cent. of the nation's wealth in automobiles, with Ohio, Indiana and New York in that order away behind.

The number of automobiles manufactured increased from 3,723 in 1899 to 127,289 in 1909, or 3,319 per cent. Of these, 126,570 machines were built in establishments of which automobiles were the main product and 719 in establishments of which such machines were merely minor products.

Imports. — According to figures compiled for the fiscal year ending June 30, the comparative importation of automobiles during the past three seasons was as follows:

	1909.	1910.	1911.
Number...	1,987	1,821	1,346
Value.....	$4,311,296	$4,440,017	$3,651,157

Eight hundred and eighty-seven cars were imported at New York between Jan. 1, 1911, and Sept. 30, valued at $2,366,887.67, as compared with 1,087 cars, valued at $2,686,803.76, and 1,487 cars valued at $3,394,553.37 during the same period of 1910 and 1909 respectively.

Exports.—Automobiles and parts exported from the United States during 1911 will aggregate approximately $20,000,000 in value. This does not include the automobiles sent to Porto Rico, Hawaii, and Alaska, which, with the parts, aggregated over one and one-half million dollars' value during the last fiscal year.

The increase in the exportation of this article of American manufacture has been almost as rapid as the growth in their use in the United States. The total value of automobiles and parts exported in 1901 was less than one million dollars, in 1902 it passed the one million dollar line, in 1903 it was more than one and one-half millions, in 1905 two and one-half millions, in 1906 four and one-half millions, in 1907 five and three-quarter millions, in 1909 seven and three-quarter millions, in 1910 thirteen millions, and in 1911 seems likely to be for automobiles alone, about fourteen million dollars; for parts, except tires, about three and one-half millions, and for tires, about two and one-half millions. These figures are all for calendar years. Even this increase in value does not fully represent the increase in the number of machines exported, since the export price has fallen in the meantime. The average export price of automobiles exported in 1908 was, in round terms, $2,000; in 1909, $1,500; in 1910, a little over $1,300; $1,000 is probably a fair estimate for 1911. Canada is by far the largest market for automobiles exported from the United States.

Prices.—Each year the tendency is for prices to cover a greater range. The drop in prices—more especially in high prices—which so many people predict year after year does not occur. However, each year makers of high-class cars give more for the money than they did theretofore. The same is true of medium priced cars. In many cases they cost less each year, so that where formerly cars listing at from $1,500 to $2,500 were regarded as medium-priced, the figures have shifted until the range is from $1,000 to $2,000. For these figures the buyer can obtain much better machines than were on the market at higher prices even a year or two ago.

When, some years ago, we reached the $1,000 car we witnessed a great enlargement in the field of possible buyers. When the $500 car appeared a still greater enlargement took place. We have now gone below the $500 mark and there will be cars on the 1912 market that will cost very little more than a horse and buggy. This opens the greatest field of all.

Design.—Wide interest is being taken in the types of motors that do not depend for their proper functioning upon poppet valves. A sliding sleeve-valve motor of the four-cycle type is now produced by a number of makers for the market in this country and abroad. In addition to this there is a strong undercurrent, with particular attention being paid to other forms of this broad idea, that is, rotary and piston valves. The United States Patent Office is being inundated with patent applications along these lines. In the near future there will be on the American market well known automobiles equipped with non-poppet valve motors of various makes. Some of these motors are very promising. Other features and mechanical elements now being developed and used to a material extent are the worm-gear drive, the silent chain, self-starting devices for motors, and electric-lighting outfits for gasoline motor cars.

Selden Patent Case.—Coming at a dramatic moment, while a great automobile show conducted under the auspices of the Association of Licensed Automobile Manufactures, was being inaugurated at Madison Square Garden, New York, the United States

Circuit Court of Appeals announced its decision on the Selden patent adversely to the Association, holding that while the patent was valid, it was not infringed by the defendants in the test cases, who were making typical modern gasoline automobiles, which the United States District Court for the Southern District of New York had previously held to be covered broadly and basically by the Selden patent. This decision had a most widespread effect, terminating a bitter controversy which had continued several years. It resulted in the reorganization under another name of the manufacturers who had made up the Association.

AERONAUTICS

ROGER B. WHITMAN

Classification of Apparatus.—Apparatus for aerial navigation may be divided into two distinct classes: those *lighter than air*, and those *heavier than air*. The former may be further classified as *free spherical balloons*, which have no means of progress other than air currents, and *dirigible balloons*, which are provided with motors, and may be driven and directed by the pilot. Heavier-than-air machines are almost universally of the *monoplane* and *biplane* types, in accordance with whether their main supporting surfaces are single or double. Other types that are being experimented with are the *helicopter*, which is supposed to rise by the direct lift of a propeller, and the *ornithopter*, which is provided with flapping wings.

Fédération Aéronautique Internationale.—The control of aeronautics is vested in the Fédération Aéronautique Internationale, which establishes rules for the conduct of contests, races, meets, etc., and issues licenses to aeronauts and aviators. The F. A. I. is composed of the following clubs, each being the sole representative of its country:

Argentine Republic.—Aero-Club Argentino.
Austria.—Osterreichischer Aero-Club.
Belgium.—Aéro-Club de Belgique.
Denmark.—Danske Aeronautiske Selskab.
France.—Aéro-Club de France.
Germany.—Deutscher Luftschiffer Verband.
Great Britain.—Royal Aero Club of the United Kingdom.
Hungary.—Kygio, Ter'.
Italy.—Societa Aeronautica Italiana.
Netherlands.—Nederlandsche Vereeniging voor Luchtvaart.
Norway.—Norks Luftseiladsforening.
Russia.—Aéro-Club Impérial de Russie.
Spain.—Real Aero Club de España.
Sweden.—Svenska Aeronautiska Sällskapet.
Switzerland.—Aéro-Club Suisse.
United States.—Aero Club of America.

BALLOONING

Free Spherical Balloons.—Flights of free spherical balloons during 1911 did not equal the best flights of previous years, which were given in the YEAR BOOK for 1910.

Ballooning is not as popular in the United States as it is in Europe, hardly 100 ascensions having been made during 1911. During the month of June 41 ascensions were made from the Parc d'Aérostation of the Aero Club of France, and 65 ascensions during July.

The most notable of the United States ascensions during 1911 were the following:

Jan. 8, balloon "St. Louis IV," Hulbert and McCullough, pilots, from St. Louis, Mo., to Scooba, Miss.; 420 miles in 22 hr. 40 min.

Feb. 24, balloon "Miss Sophia," Assman, pilot, from San Antonio, Tex., to Gowers, Mo.; 732 miles in 22 hr. 28 min.

Apr. 10, Honeywell, pilot, from San Antonio, Tex., to Little Rock, Ark.; 505 miles in 19 hr.

Apr. 13, balloon "Cleveland," Stevens, pilot, and 4 passengers, ascended from North Adams and made flight of 2½ hr.

Apr. 25, balloon "Drifter," Holz and Troutman, pilots, from Hamilton, O., to Princeton, Ill.; 280 miles.

May 7, balloon "Miss Sophia," Assman, pilot, with Lieut. Hart and Serg'ts O'Reilly and Wunder, from St. Louis, Mo., to Springfield, O.; 357 miles. During this flight wireless telegraphic com-

munication between land stations and a free balloon was established for the first time.

May 24, Capt. Chandler, pilot, and 4 army officers, made flight from Ft. Omaha to Woodbine, Ia., 35 miles, wireless communication being maintained during the entire trip.

June 3, intercollegiate balloon race, starting at North Adams, resulted as follows: Winner, balloon "Philadelphia," Univ. of Penn., Atherholt, pilot, 115 miles to Peabody, Mass.; second, balloon "Stevens 27," Williams College, Shearman, pilot, 66 miles to Paxton, Mass.; third, balloon "Boston," Dartmouth College, Barton, pilot, 41 miles to West Pelham, Mass.

July 20, Balloon "Wanamaker I," Stevens, pilot, from roof of Wanamaker building, New York City, to Nyack, N. Y., in 3 hr. 23 min.

Gordon-Bennett Balloon Trophy.—As a preliminary to the 6th contest for the Gordon-Bennett International Balloon Trophy, and to select a team of three pilots to defend the trophy for the Aero Club of America, an elimination race was held at Kansas City, Mo., July 10. As a result the pilots selected were Lahm, who won the first contest for the trophy, Berry, and Assman. The Gordon-Bennett race was started at Kansas City, Oct. 5, and the results were as follows:

"Berlin II." (Germany)—Hans Gericke, pilot; S. Otto Duncker, aide; landed at Holcombe, Wis.; distance, 471 miles; time, 12 hr. 28 min. 20 sec.

"Buckeye," (America)—Lieut. F. P. Lahm, U. S. A., pilot; J. H. Wade, Jr., aide; landed at Millston, Wis.; distance, 408 miles; time, 8 hr. 47 min. 30 sec.

"Berlin," (Germany).—Lieut. L. Vogt, pilot; Martin Schoeller, aide; landed at Austin, Minn.; distance, 350 miles; time, 16 hr. 16 min.

"Million Population Club," (America).—John Berry, pilot; P. J. McCollough, aide; landed at Mason City, Ia.; distance, 293 miles; time, 23 hr. 2 min. 30 sec.

"America II," (America).—W. F. Assman, pilot; J. Cowan Hulbert, aide; landed at Emmettsburg, Ia.; distance, 275 miles; time, 7 hr. 46 min. 30 sec.

"Condor III," (France).—Emile Dubonnet, pilot; Pierre Dupont, aide; landed at Mingo, Ia.; distance, 200 miles; time, 27 hr. 22 min. 30 sec.

The possession of the trophy thus passes from the Aero Club of America to the Deutscher Luftschiffer Verband, of which Gericke is a member, and the next contest will be held in Germany under the auspices of that organization.

The results of previous contests for the Gordon-Bennett trophy were summarized in the YEAR BOOK for 1910.

Dirigible Balloons.—Aside from a few exhibition flights made in one-man machines, there has been no progress in the development of dirigible balloons in the United States during 1911. The military Baldwin machine has made only one or two short flights of little practical value. Aside from this machine, the only other modern dirigible is of the "Zodiac" type, built in France, and owned by Stewart Davis, Esq., of Rhode Island. The German Zeppelin "Schwaben" has totalled several thousand miles of flight, and this type, as well as the Parsevals, have demonstrated their value in connection with military maneuvers. Dirigibles were used extensively during the summer maneuvers of the French and Italian armies, but they showed neither the speed nor the ability of the German machines. The British Army has done considerable experimental work, but with no great success.

The great number of flights made by the European dirigibles makes it impossible to record any but the most important events of the year.

Jan. 20.—Italian dirigible "Ansonia II," made successful trial trip from Verona to Montichiari.

Mar. 30.—Trial trip of Zeppelin dirigible, constructed to replace the wrecked "Deutschland."

April.—Trials of the Japanese dirigible "Yamada II," at Osaka.

Apr. 21.—German dirigible "Parseval VI," injured during attempted non-stop flight from Berlin to Amsterdam.

May.—New German Zeppelin dirigible "Deutschland" made flight from Friedrichshafen to Düsseldorf via Baden-Baden and Stuttgart. Seriously damaged while being drawn out of Düsseldorf hangar.

May 22.—Trial of British naval dirigible "Mayfly," at Barrow-in-Furness.

June.—Tests at St. Petersburg of German-built Parseval dirigible, owned by Russian government.

June.—Trials of German Zeppelin dirigible "Schwaben."

June 19.—French Clement-Bayard dirigible "Adjudant Vincenot," with crew of six, made world's altitude record by an ascent of 6,570 ft.

June 26.—German dirigible "Parseval V," destroyed by fire.

June 30.—Stewart Davis and a passenger made a flight over southern Rhode Island in the dirigible "Zodiac IV."

Sept. 6 to 9.—Zeppelin dirigible "Schwaben" flew from Baden-Baden to Berlin, making a stop at Gotha.

Sept. 18-19.—French dirigible "Adjudant Reau" made a reconnaissance trip from Paris with 9 passengers, covering 612 miles in 21 hr. 20 min.

Oct. 15.—German dirigible "Schwaben" made her 100th trip since July 15. She has carried 2,226 passengers, including the crew, and has covered 7,750 miles. She has flown a total of 224 hr.

Oct. 19.—German dirigible "Schwaben" flew from Dusseldorf to Berlin, via Bremen and Hamburg, 380 miles, in 10 hr. 50 min.

Oct. 19.—German military dirigible "Zeppelin IX" completed a 20-hr. nonstop at Baden-Baden.

AVIATION

European and American Developments.—The advances made in aviation during 1910 presaged an extraordinary development for 1911, and this was amply borne out. The most striking result of the year's work, however, was the change in the attitude of the public from regarding the aeroplane as an experimental and dangerous apparatus to accepting it as a means of transportation, lacking little to be practical and of general service.

The most remarkable performances during 1911, as in 1910, were in Europe. This was not due to any lack of ability on the part of American aviators, nor is it a criticism of American aeroplanes, but may be laid entirely to the difference in conditions and incentive. In America the public demand was for exhibitions, and at least ten teams of flyers filled contracts at fairs and expositions, or at flights promoted by Boards of Trade and Chambers of Commerce for municipal publicity. The desire of the people was to see men fly, without regard to special performances. With the exception of the Hearst prize of $50,000 for a coast-to-coast flight, there was no offer of prize money that attracted particular attention. In Europe, on the contrary, large sums were offered for special performances, races, intercity flights, and the like, and the aviators and builders were spurred to a remarkable activity. Furthermore, European investors have been willing to finance aeroplane and engine builders, even though the returns would be indefinite and uncertain. American investors, on the contrary, have hesitated to furnish money for experimental purposes, and development of aeronautics in America has consequently been slow and restricted in scope.

The machines of 1911 showed little improvement over those of 1910, and this only in detail. There was no approach to changes of a radical nature in design or construction, and the advances shown during 1911 may be laid chiefly to the increased skill of the aviators.

Aeroplane Records.—The best indication of the year's progress lies in a comparison of the records as they stood on Jan. 1, 1911, with those of Jan. 1, 1912. Jan. 1, 1911, the records stood as follows:

World's one-man distance record: Maurice Tabuteau, Buc, France, Dec. 30, 1910, 362.66 miles, in M. Farman biplane.

World's two-man distance record: E. Aubrun, Rheims, France, July 9, 1910, 85.21 miles, in Blériot monoplane.

World's three-man distance record: J. Mamet, Rheims, France, July 9, 1910. 57.5 miles in Blériot monoplane.

World's one-man duration record: H. Farman, Etampes, France, Dec. 18, 1910, 8 hr. 12 min. 47⅘ sec., in Farman biplane.

World's two-man duration record: Amerigo, Mulhausen, Germany, Dec. 11, 1910, 3 hr. 19 min. 39⅘ sec., in Aviatik biplane.

World's three-man duration record: J. Mamet, Rheims, July 9, 1910, 1 hr. 38 min. 40 sec., 85.21 miles, in Blériot monoplane.

World's speed record: A. Leblanc, Belmont Park, U. S. A., Oct. 29, 1910. 67.868 miles per hr.

World's altitude record: Legagneux, Pau, France, Dec. 9, 1910. 10,168 ft. in Blériot monoplane.

At the end of 1911 the records stood as follows:

World's one-man distance record: Geo. Fourny, Buc, France, Sept. 2, 1911. 447 miles, in M. Farman biplane.

World's two-man distance record: Lieut. Bier, Oct. 2, Wiener-Nieustadt, Aus., 155.5 miles in Etrich monoplane.

World's three-man distance record: Lieut. Bier, Oct. 4, 1911, Wiener-Nieustadt, Aus., 69.5 miles.

World's one-man duration record: Geo. Fourny, Buc, France, Sept. 2, 1911. 11 hr. 1 min. 29 sec. in M. Farman biplane.

World's two-man duration record: Suvelick, Johannisthal, Ger., Dec. 8, 1911, 4 hr. 23 min.

World's three-man duration record: Lieut. T. deWitt Milling, U. S. A., Garden City, N. Y., Sept. 26, 1911. I hr. 54 min. 42⅘ sec. in Wright biplane.

World's speed record: Edouard Nieuport, Mourmelon, France, June 21, 1911, 82.727 miles per hour, in Nieuport monoplane.

World's altitude record: Garros, Parame, France, Sept. 4, 1911. 13,940 feet, in Blériot monoplane.

World's sustained cross-country flight record: Pierre Prier, London to Paris, Apr. 12, 1911. By his route, 260 miles, in Blériot monoplane.

Paris-Rome-Turin Race.—This race was organized by the *Petit Parisien*, the prizes totalling $100,000. There were three stages: Paris to Nice, via Dijon, Lyons and Avignon, 538 miles; Nice to Rome, via Genoa and Pisa, 372 miles; Rome to Turin, via Florence and Bologna, 391 miles. Of the 12 starters on May 28, four reached Nice, "Beaumont" (Lieut. Conneau) leading, and Garros second. The same four reached Rome in the same order, and here the race was abandoned because of bad weather. "Beaumont's" total time was 82 hr. 5 min., and Garros' time was 106 hr. 16 min. The other contestants to finish were Frey and Vidart.

Circuit of Europe.—The 1,730 km. (1,073 miles) circuit of Europe was most successful. In view of past performances in long distance cross country flights it did not appear that many would get through. Where Blériot's first crossing of the channel was heralded the world wide as a most stupendous flight, here 11 crossed in going and nine on the home run quite as a matter of course.

There are nine stages to the circuit, besides a number of compulsory stops, as follows:

Paris-Liège, Belgium, 212 miles.
Liège-Spa-Liège, 37½ miles.
Spa-Utrecht, Holland, 112½ miles.
Utrecht-Brussels, Belgium, 93¾ miles.
Brussels-Roubaix, France, 56¼ miles.
Roubaix-Calais, France, 62½ miles.
Calais-London, England, 93¼ miles.
London-Calais, 93¼ miles.
Calais to Paris, 156¼ miles.

Out of 52 entrants for this race around Europe, which started June 18 and ended, again at Paris, on July 7, 40 actually started off the ground. Eighteen got through the first day's journey and nine were given a place at the end, though of these only seven actually flew every stage. One monoplane, an R. E. P. of Gibert's, and two Maurice Farman biplanes, those of Renaux and Barra, finished without replacements or changes in mounts, though Barra skipped two stages. The other competitors changed mounts or made repairs at various points. Sometimes new machines were waiting along the line. Renaux carried a passenger every foot of the way.

"Beaumont" (Lieut. Conneau) won $21,244, Garros $8,466, Vidart $3,311, Vedrines $2,217, Gibert $1,555, Kimmerling $1,155, Renaux $1,122, and Barra $922.

The competitors who finished the total distance and their records were:

	Hr.	Min.	Sec.
Beaumont (Blériot)	58	38	00
Garros (Blériot)	62	17	16
Vidart (Deperdussin)	73	32	57
Vedrines (Morane)	86	34	02
Gibert (R. E. P.).....	89	42	34
Kimmerling (Sommer) ...	93	10	24
Renaux (M. Farman) 110		44	05

Circuit of England.—The *Daily Mail* offered a prize of £10,000 to the winner of a race around England, the circuit being 1,000 miles in length. It was divided into five stages, as follows: Brooklands to Hendon, 20 miles; Hendon to Edinburgh, 343 miles; Edinburgh to Bristol, 383 miles; Bristol to Brighton, 214 miles; Brighton to Brooklands, 40 miles. Of the 17 starters only four finished, with two of these hopelessly out of the counting for the prize. The race was won by "Beaumont" (Lieut. Conneau, of the French Army) in 22 hr. 29 min. 6 sec., Vedrines being second in 23 hr. 38 min. 5 sec.

Michelin Puy-de-Dome Prize.—Eugene Renaux, on March 7, won the $20,000 Michelin prize offered three years ago for a passenger flight from Paris to the top of Puy de Dome, near Clermont-Ferrant, France. This mountain has an altitude of over 4,700 feet and the only available landing space is a small plateau about 360 ft. by 131 ft. He used a Maurice Farman biplane with a 60-h.p. Renault 8-cylinder air-cooled motor.

The distance from the starting point to the landing point is 350 km. (217 miles). The total time consumed in making the flight was 5 hr. 10 min. 46 sec.; maximum time allowed under the regulations being 6 hours. He made one stop at Nevers for the purpose of replenishing oil and gas.

Gordon Bennett Aviation Cup.—The Gordon Bennett Aviation Cup-race of 1911 was flown at Eastchurch, England, on July 1, over a distance of 150 km. (93.2 miles) and was won by Charles Terres Weymann, the representative of the Aero Club of America, in 1 hr. 11 min. 36 1-5 sec.—a new record. He drove a 100-h.p. Gnôme-engined Nieuport monoplane.

The following table will give the records of the other starters:

		Hr.	Min.	Sec.
Alfred Leblanc	100 H. P. Gnôme-Nieuport	1	13	40⅕
Edouard Nieuport	70 H. P. Gnôme-Nieuport	1	14	37⅖
Alec Ogilvie	1910 "Baby"-Wright	1	49	10⅖
Chevallier	30 Nieuport-Nieuport (60 km.)		37	50⅘

A wind varying from 20 to 10 miles an hour blew throughout the contest, starts for which could take place between 11.46½ a. m. and 6.46½ p. m., Greenwich time. The course measured 6 km. to the lap so that 25 circuits had to be flown. The speed of the winner was something over 78 miles per hour, equivalent to about 90 miles straightaway. The possession of the trophy thus passed to the Aero Club of America, and the next contest will be held by that organization in the United States.

Rodgers' Coast-to-Coast Flight.—On Sept. 17 C. P. Rodgers left Sheepshead Bay, N. Y., in a Wright biplane, in an attempt to win the Hearst $50,000 prize offered during 1910 for the first flight from the Atlantic to the Pacific coast. The period of twelve months allowed for the flight expired Oct. 10, on which date Rodgers was in Indiana. He continued his flight, however, and arrived at Los Angeles, Cal., Nov. 5, where he considered his trip at an end. He met with continual delay through bad weather, breakage, etc., but his flight stands as the longest cross-country aeroplane trip on record. His daily flights were as follows:

Started from Sheepshead Bay, New York, at 4:25 P. M., Sept. 17.

Reached	Miles.	Dates.
Middletown, N. Y.	84	Sept. 17
Callicoon, N. Y.	179	Sept. 21
Elmira, N. Y.	289	Sept. 22
Canisteo, N. Y.	315	Sept. 23
Salamanca, N. Y.	442	Sept. 24
Canton, Ohio	646	Sept. 28
Rivarre, Ind.	851	Sept. 30
Huntington, Ind.	887	Oct. 1
Hammond, Ind.	1,010	Oct. 5
Chicago	1,199	Oct. 8
Kansas City, Mo.	1,482	Oct. 11
San Antonio, Texas	1,789	Oct. 12
Sanderson, Texas	2,069	Oct. 26
Sierra Blanca	2,291	Oct. 28
El Paso	2,381	Oct. 29
Willcox, Ariz.	2,603	Oct. 31
Maricopa, Ariz.	2,780	Nov. 1
Stiovell, Ariz.	2,920	Nov. 5
Imperial Junction, Col.	3,053	Nov. 2
Banning, Cal.	3,153	Nov. 3
Los Angeles, Cal.	3,220	Nov. 4

Rodgers finally reached the Coast Dec. 8.

French Military Competition.—The French War Department offered $220,000 in cash prizes and in orders for aeroplanes fulfilling certain specific requirements, and the competition took place at Rheims during October and November, with 31 entrants. To satisfy the requirements a machine should be arranged to carry the aviator, an aide and an observer, and should be capable of lifting a useful load of 300 km. (662 lb.), exclusive of fuel, oil and water. It should also be capable of alighting on and rising from ploughed land, stubble fields and similar surfaces and be foldable or easily dismountable for transportation by road. Of the ma-

chines satisfying these requirements the winner would be the one capable of the highest speed. The machines that passed the preliminary alighting tests were the following:

Nieuport monoplane, 100 h. p. Gnôme engine, driven by Weyman.

Maurice Farman biplane, 70 h. p. Renault engine, driven by Renaux.

Maurice Farman biplane, 70 h. p. Renault engine, driven by Barra.

Henry Farman biplane, 70 h. p. Gnôme engine, driven by Fischer.

Savary biplane, 70 h. p. Labor engine, driven by Frantz.

Deperdussin monoplane, 60 h. p. Anzani engine, driven by Prevost.

Breguet biplane, 100 h. p. Gnôme engine, driven by Momeau.

Breguet biplane, 140 h. p. Gnôme engine, driven by Bregi.

The remaining contests included a flight to a point 50 km. distant and return at a minimum speed of 60 km. per hr., an ascent to 1,500 m. within 15 minutes, and a speed contest for 300 km. (186 miles) cross-country. The contest was won by the Nieuport monoplane, with the Deperdussin monoplane second.

Chronology.—The immense number of flights made in this country and in Europe precludes mention of all but those of especial merit. The following chronological records are of interest as showing the steady advances made throughout the year in all phases of aviation, and they also show the effect of example, for almost every feat is followed within a few days by the performance of similar feats surpassing the first. World's records are authorized by the Fédération Aéronautique Internationale, and can only be accepted when the performance is in accordance with its rules, and witnessed by its representative.

American Aviation Record

Jan. 18. Eugene Ely in Curtiss biplane started from aviation field at San Francisco, and landed on a platform on the deck of U. S. S. *Pennsylvania,* anchored in the bay. Later he ascended from the platform and returned to the field. This was the first performance of the feat.

Jan. 22. Parmelee in Wright biplane flew for 3 hr. 39 min. 49½ sec., establishing an American duration record.

Jan. 26. Curtiss in hydro-biplane rose from water in San Diego Bay. First performance of this feat in America.

Jan. 30. McCurdy in Curtiss biplane flew from Key West toward Havana, covering 90 miles. He was forced to descend into the sea 10 miles from Havana. He established American straight-away distance record and world's cross-water record. It was the first time that an aeroplane had flown out of sight of land on a clear day.

Feb. 5. McCurdy flew from Camp Columbia, near Havana, to Morro Castle over sea and land, and returned, covering 16 miles.

Feb. 7. Harkness in Antoinette monoplane flew from San Diego to U. S. Army camp on the Mexican border bearing military despatches. The round trip of 42 miles over broken country was made in 56 min.

Feb. 10-12. Hamilton made flights from El Paso, Tex., over Juarez, Mex., then in a state of siege.

Feb. 17. Curtiss in hydro-biplane rose from water, alighted alongside battleship, and was hoisted on board with his machine. This, with his return trip, demonstrated the possibilities of the aeroplane for naval use.

Feb. 19. C. F. Walsh made a 30-min. flight at Los Angeles, carrying his wife and two children.

Feb. 24. Morriss, flying with McCurdy at Palm Beach in Curtiss biplane, received messages from coast and steamer wireless stations. This was the first time that wireless messages were received by an aeroplane.

Mar. 2. Garros in Blériot monoplane attained an altitude of 4,879 ft. over Mexico City, the altitude of which is 7,861 ft. This total of 12,740 ft. was greatest altitude that had been reached by an aeroplane.

Mar. 3. Parmelee and Lieut. Foulois, U. S. A., flew in Wright biplane from Laredo to Eagle Pass, 106 miles, in 2 hr., 10 min. Total weight carried, 1,400 lb. For 102 miles there was no landing place save the Rio Grande. The trip established American records for sustained cross-country flight and for weight carried.

Apr. 27. Coffyn, with Lieut. Foulois as passenger, flew in Wright biplane for 1 hr. 30 min., creating American two-man duration record.

June 27. Beachey in Curtiss biplane flew over Niagara Falls, under the bridges, and down the gorge.

June 30. Atwood with a passenger left Boston in a Wright biplane for New London, 135 miles. He circled over the Thames during the Harvard-Yale boat race. The following days he with his passenger continued the flight to Washington, as follows:—

Date	Miles
June 30—Boston to New London	135
July 1—New London to New York	133
July 4—New York to Atlantic City	110
July 10—Atlantic City to Baltimore	148
July 11—Baltimore to Washington	42
Total	568

July 22. Welsh, in Wright biplane, with a passenger, ascended 2,648 ft., establishing American 2-man altitude record.

July 27. St. Croix Johnstone made flight of 176 miles, 1,254 ft. in 4 hr. 1 min. 53⅘ sec., using a Moisant monoplane, at Garden City, L. I. He established American one-man records for distance and duration.

Aug. 5. Cross-country race from New York City to Philadelphia, between Beachey, Robinson and Ely in Curtiss biplanes. Won by Beachey in flying time of 1 hr. 50 min. Robinson second, 2 hr. 8 min. 47 sec. Ely did not finish.

Aug. 5. Beatty in Wright biplane with passenger ascended 3,080 ft. at Garden City, creating American two-man altitude record.

Aug. 14-25. Atwood in Wright biplane flew from St. Louis to New York City, 1,273 miles, his progress being as follows:

Aug. 14—St. Louis to Chicago, 283 miles, 6 hr. 32 min.

Aug. 15—Chicago to Elkhart, Ind., 101 miles, 2 hr. 16 min.

Aug. 16—Elkhart to Toledo, O., 134 miles, 2 hr. 41 min.

Aug. 17—Toledo to Cleveland, 123 miles, 2 hr. 20 min.

Aug. 18—Cleveland to Swanville, Pa., 84 miles, 2 hr. 07 min.

Aug. 19—Swanville, Pa., to Buffalo, N. Y., 106 miles, 2 hr. 23 min.

Aug. 20—Buffalo, N. Y., to Lyons, N. Y., 104 miles, 2 hr. 14 min.

Aug. 21—Lyons to Belle Isle, 40 miles, 1 hr. 28 min.

Aug. 22—Belle Isle to Fort Plain, 95 miles, in 2 hr. 10 min.

Aug. 23.—Fort Plain to Castleton, 66 miles, in 1 hr. 32 min.

Aug. 24. Castleton to Nyack, 109 miles, in 2 hr. 37 min. Nyack to New York City, 28 miles, in 46 min. Total, 1,273 miles in 28 hours, 53 minutes. The biplane and mechanism required no repairs during the entire trip, except that two engine bearings required rebabbitting. This flight created a world's record for continued cross-country flight.

Aug. 12-20. Chicago aviation meet, the results being as follows:

World Records

Altitude.—11,642 ft., Aug. 20, Lincoln Beachey (Curtiss 50.)

Two-man Duration.—3 hr. 42 min. 22⅕ sec., Aug. 19, G. W. Beatty (Wright 30).

Climbing Speed.—500 m. in 3 min. 35 sec. T. O. M. Sopwith (Blériot 70) and Réné Simon (Blériot 50), tied, August 19.

American Records

Two-man Speed for 10 km.—7 min. 50 sec., T. O. M. Sopwith (Blériot 70), Aug. 17.

Three-man Speed for 5 km.—6 min. 56⅗ sec., T. O. M. Sopwith (Wright), Aug. 15.

Fastest Two-man Speed.—57.785 m. p. h., T. O. M. Sopwith (Blériot 70), Aug. 17.

Fastest Three-man Speed.—34.6 m. p. h., T. O. M. Sopwith (Wright 30), Aug. 15.

Two-man Duration.—3 hr. 42 min. 22⅕ sec., G. W. Beatty (Wright), Aug. 19.

Three-man Duration.—1 hr. 18 min., 22 sec., G. W. Beatty (Wright 30), Aug. 13.

Sept. 5. Ovington covered 160-mile course from Squantum field, Boston, to Nashua, Worcester, Providence, and back, 3 hr. 6 min. 22⅕ sec., using a Queen-Blériot monoplane.

Sept. 7. Lieut. Rogers, U. S. N., flew in Wright biplane from Annapolis to Washington. This was the longest flight made by an officer of the Army or Navy.

Sept. 7. Lieut. Ellyson, U. S. N., made successful test at Hammondsport, N. Y., of a device for launching aeroplanes from ships.

Sept. 26. Lieut. Milling, U. S. A., made world's 3-man duration record in Wright biplane at Garden City, L. I., by flight of 1 hr. 54 min. 42⅘ sec.

Oct. 17-20. Robinson in Curtiss hydro-biplane flew down the Mississippi from Minneapolis to Rock Island, 325 miles.

Oct. 23. Howard W. Gill made American duration record by flying 4 hr. 16 min. in Wright biplane at St. Louis.

Oct. 25. Lieuts. Ellyson and Towers flew from Annapolis to Fortress Monroe, 140 miles, in 2 hr. 20 min., in a Curtiss hydro-biplane fitted with dual control.

European Aviation Record

Jan. 15. Bathiot in Sommer biplane flew 68 miles cross-country in 52 min.

Jan. 17. Chas. Weymann flew cross-country with two passengers for 37 miles, making a world's record.

Jan. 22. Chas. Weymann flew cross-

country with three passengers for 37 miles, making a world's record.

Jan. 23. Louis Breguet with a passenger flew 62.15 miles in 1 hr. 9 min. 20 sec.

Jan. 28. Roger Sommer made a 20 minute cross-country with 6 passengers.

Feb. 1. Capt. G. M. Bellenger flew from Vincennes to Bordeaux, 330 miles, making two stops. The following day he continued his flight to Pau, 140 miles, making no stops.

Feb. 2. Theo. Lemartin took up 7 passengers in Blériot monoplane, the total load carried being 1,100 lb.

Feb. 13. Busson in Deperdussin monoplane with a passenger flew 62.15 miles in 1 hr. 1 min. 32 sec.

Mar. 5. Lieut. Bague flew from Nice to Gorgona Island, between Italy and Corsica, covering 138 miles over water.

Mar. 6. Edouard Nieuport with a passenger flew 100 km. (62.15 miles) within the hour, his time being 59 min. 16 sec. He continued to 150 km., breaking world's two-man distance record.

Mar. 6. Breguet with 2 passengers flew 62.15 miles in 1 hr. 15 min. 17⅘ sec., making world's record for three-man flight.

Mar. 7. Eugene Renaux won Michelin prize by flight from Paris to the top of the Puy de Dôme.

Mar. 9. Nieuport with 2 passengers flew 68.36 miles, making world's distance and hour records (63.05 miles) for 3-man flight.

Mar. 10. Busson with 3 passengers flew 31.07 miles in 31 min. 23⅕ sec., making world's records for duration, distance and speed for 4-man flight.

Mar. 10. Busson with 4 passengers covered 15.54 miles in 17 min. 28⅕ sec., making world's records for 5-man flight. Live load was 730 lb.

Mar. 23. Breguet flew for 2 miles with 11 passengers. Total weight lifted, 1,395.4 lb.

Mar. 24. Sommer took up 12 passengers, the total weight lifted being 1,439.6 lb.

Mar. 30. Sommer with 7 passengers flew for 1 hr. 30 min., the total weight lifted being 1,002 lb.

Apr. 2. Lieut. Euler and a passenger concluded at Döberitz, Germany, a round trip of 421 miles that included Hamburg, Bremen and Hanover.

Apr. 12. Pierre Prier flew from Hendon, (London) Eng., to Paris, France, without a stop. By his route he covered 260 miles, his time being 3 hr. 56 min. This established a world's record for sustained cross-country flight.

Apr. 24. Pierre Vedrine arrived at Pau from Paris, which he left Apr. 22. He covered a course of 500 miles at the rate of 72.28 miles per hr.

May 7. Helmut Hirth established a German 2-man altitude record by an ascent of 2,630 ft.

May 11. Nieuport flew 62.15 miles in 50 min. 4 sec., making a world's record.

May 21-27. Hirth won cross-country race through the Rhine district from Baden-Baden to Frankfort.

May 22-26. Paris to Madrid race, 842 miles, won by Vedrine in 12 hr. 18 min.

May 25. Lieut. Menard with a passenger flew from Mourmelon to Poitiers, 373 miles, in 9¼ hr., with 2 stops.

May 28. Paris-Rome race, 910 miles, won by "Beaumont" (Lieut. Conneau) in 82 hr. 5 min.

June 6. Hirth established world's 2-man altitude record by an ascent of 5,250 ft.

June 11. German inter-city passenger race, 935.85 miles, won by Benno Konig.

June 18. European circuit race, 1,073 miles, won by "Beaumont" in 58 hr. 38 min.

June 21. Nieuport established world's speed record by flying at the rate of 82.727 miles per hour at Mourmelon.

June 29. Hirth with a passenger flew from Munich to Berlin, 345 miles, in 5 hr. 41 min., with two stops.

July 1. Gordon Bennett Aviation race, Eastchurch, Eng., won by Weymann, representing the Aero Club of America. He covered the 150 kilometers (93.2 miles) in 1 hr. 11 min. 36⅕ sec.

July 7. Verrept, in Belgium, flew 221.1 miles in 4 hr. 19 min. 42 sec.

July 8. Loridan in Farman biplane made world's altitude record by an ascent of 10,758 ft.

July 9. Level in Savary biplane made world's 2-man speed and distance records by flight of 124.3 miles in 2 hr. 38 min. 26.4 sec. in closed circuit.

July 18. Jean Olieslagers in Blériot monoplane flew 394 miles in 7 hr. 18 min. 26⅘ sec., winning Grand Prize of the Aero Club of Belgium.

July 21. Loridan in Farman biplane at Mourmelon made flights totalling 465¾ miles, being in the air 11 hr. 45 min.

July 22-26. Circuit of England, won by "Beaumont." 1,010 miles in 22 hr. 29 min. 6 sec.

July 24. St. Petersburg-Moscow race, 400 miles, won by Vassilieff.

July 30. Level in Savary biplane made world's 2-man distance record by flight of 150¼ miles.

Aug. 5. Capt. Julian Felix in Blériot

monoplane made world's altitude record at Etampes by an ascent of 11,330 ft.

Aug. 7. Renaux in M. Farman biplane made flights on St. Cyr-Chartres course, totalling 12 hr. 12 min., covering 428 miles.

Aug. 7. Montalent at Brooklands made world's 2-man altitude record by an ascent of 6,750 ft.

Aug. 9. Jules Vedrines in Morane monoplane near Paris made flights totalling 7 hr. 56 min. 36 sec., covering 497 miles.

Aug. 17. Lieut. Gerrard in Short biplane at Eastchurch, Eng., made world's 2-man duration record by flight of 4 hr. 13 min.

Aug. 17. Lieut. Sampson in Short biplane at Eastchurch, Eng., made British duration record by flight of 4 hr. 58½ min.

Aug. 17. Momeau in Breguet biplane at Douai, with 2 passengers, ascended 3,320 ft.

Aug. 19. Mlle. Jeanne Herveu in Blériot monoplane made flight of 63 miles in 1 hr. 45 min. for the Coupe Femina.

Aug. 26. Emmanuel Helen in Nieuport monoplane at Mourmelon made flights totalling 13 hr. 47 min. 19 sec., covering 699.9 miles.

Aug. 28. Pascal in Deperdussin monoplane made flights totalling 505 miles.

Aug. 29. Sommer flew 10 miles with 6 passengers at Douzy.

Sept. 2. Georges Fourny in M. Farman biplane at Buc made world's distance and duration records by flight of 447 miles in 11 hr. 1 min. 29 sec.

Sept. 4. Garros in Blériot monoplane made world's altitude record by ascent of 13,940 feet at Parame, France.

Sept. 8. Helen in Nieuport monoplane made flights totalling 14 hr. 7 min. covering 776.86 miles.

Sept. 22. Mahieu in Voisin biplane at Moulineaux made world's 2-man altitude record by ascent of 7,380 ft.

Sept. 30. Termination of period allowed for competition for Quentin-Bauchart prize for greatest total distance flown cross-country, the aviator carrying a passenger adding 25 per cent. to his score. Prize won by Renaux, flying an M. Farman biplane with Renault motor, 6,600 km. (4,100 miles); second, Helen, flying a Nieuport monoplane, 5,300 km. (3,290 miles); third, Tabuteau, flying a Bristol biplane and a Morane monoplane, 3,400 km. (2,120 miles).

Sept. 29. Lieut. Bier in Etrich monoplane made world's record for three-man altitude by an ascent of 3,860 ft.

Oct. 2. Lieut. Bier in Etrich monoplane made world's two-man distance record by flight of 155.5 miles.

Oct. 4. Lieut. Bier in Etrich monoplane made world's three-man distance record by flight of 70 miles.

Oct. 18. Sommer in his biplane flew cross-country for 55 minutes with 6 passengers, weighing 970 lb.

Oct. 20. De Ranzay flew from Boulogne to Florence, 100 km., with passenger. First flight over the Appenines.

Oct. 30. Waschalowski made world's four-man duration record by flight of 45 min. 46 sec. at Wiener-Neustadt.

Necrology.—The death of an aviator is given such wide publicity by the newspapers that the general public is under the impression that aviation is far more dangerous than is really the case. As a matter of fact, the number of deaths up to Oct. 14, 1911, due to power-driven machines is 111, 1 in 1908, 4 in 1909, 30 in 1910 and 76 in 1911. By the end of 1911 the International Aeronautic Federation had licensed over 1,000 aviators, and considerably over 15,000 persons have made flights as operators or passengers. Welsh, the Head Instructor of the Wright School at Dayton, states that he has made over 4,500 passenger-carrying flights, without accident. In view of these facts, the proportion of deaths is very low. In a great majority of cases accidents are preventable, being due principally to inexperience, although faulty construction is frequently responsible. It is a fact that the number of deaths in proportion to the miles flown is rapidly decreasing. Deaths from aeroplane accidents during 1911 were as follows:

Roussijan, Edouard, thrown out when machine struck building. Belgrade, Servia, Jan. 9.

Stein, Lieut., of the German Military Aviation Service, killed by fall of 65 ft. in Wright biplane at Doberitz, Feb. 6.

Noel and Delatorre, killed by fall of 250 ft., due to collapse of wings of new military monoplane at Douai, Feb. 9.

Cei, Joseph, killed by fall of 2,200 ft. in Caudron biplane due to motor failure. Puteaux, France, Mar. 28.

Byasson, Lieut., of the French Naval Service, killed by capsize of monoplane, Chevreuse, France, Apr. 14.

Carron, Capt., of the French Army Aviation Corps, killed by fall of 250

ft., while in flight from Orleans to Versailles, Apr. 18.

LIERRE, Louis, killed by 15-ft. fall at Chalons, France, Apr. 20.

PURVIS, Wm. A., died Apr. 25 from effects of fall in Gates biplane at Baton Rouge, La., Mar. 5.

MATIEVITCH and brother, killed at Sevastopol, May 1.

VALLON, Rene, killed in Sommer biplane at Shanghai, China, May 6.

KELLY, Lieut. Geo. E. M., U. S. A., killed by fall of 30 ft. in Curtiss biplane at San Antonio, May 10. Machine was injured by a hard landing, and collapsed when in its rebound the aviator attempted to turn to avoid endangering spectators.

BOCKEMUELLER, Hans, killed in Poulain monoplane by collision with building hidden in mist at Johannisthal, Ger., May 11.

HARTLE, A. V., killed in self-made biplane by fall of 40 ft., due to detachment of aileron, at Dominguez, Cal., May 17.

SMITH, Vladimir, British aviator, killed by fall of 120 ft. in Sommer biplane at St. Petersburg, May 17.

DUPUIS, Lieut. Paul, and BOURNIQUE, Pierre M., killed by capsize of R. E. P. monoplane, at Rheims, Fr., May 18. Machine took fire as it struck the ground.

LAEMMLIN, Carl, killed by collision with tree at Strasbourg, May 23.

BENSON, Walter, killed through inexperience at Hendon, Eng., May 25.

CIRRI, Ciro, killed in Blériot monoplane by fall of 650 ft., due to fire, at Voghera, It., May 28.

QUAREZ, ——, killed at San Pablo, Brazil, June 1.

PENOT, Marcel, mortally injured in Curtiss-copy biplane by hard landing at Havana, Cuba, June 5.

BAGUE, Lieut., lost in Mediterrancan while attempting flight from Nice to Corsica, June 5.

MARRA, ——, killed at Rome, It., June 8.

SCHENDEL, Georg, and VOSS, his mechanic, lost control in high wind and fell 6,000 feet at Johannisthal, Ger., June 9.

WIESENBACH, Vincenz, killed by fall of 50 ft., due to collapse of his own-built monoplane at Wiener-Neustadt, Aus., June 9.

PRINCETEAU, Capt., killed by burning in midair, Vincennes, Fr., June 18.

LE MARTIN, Theodore, killed in Blériot monoplane by fall of 200 ft., due to derangement of steering gear, at Vincennes, Fr., June 18.

LANDRON, ——, killed by burning of Pischoff monoplane in midair, Vincennes, Fr., June 18.

TRUCHON, Lieut., mortally injured in Farman biplane through mishandling at Chalons, Fr., June 29.

PAILLOLE, Edouard, killed by fall of 150 ft. due to capsizing at Algiers, July 14.

MOORE, Mme. Denize, killed in biplane by fall of 150 ft., due to capsize, at Etampes, Fr., July 21.

JOLY, Henri, killed in Voisin biplane by fall of 200 ft., due to loss of control, at Juvisy, Fr., July 23.

SHIMANSKY, M., passenger of Slusarenkos, killed by fall at St. Petersburg, July 25.

NAPIER, Gerald, killed when sudden gust of wind dashed his Bristol biplane to the ground at Brooklands, Eng., Aug. 2.

BADGER, Wm. R., killed in Baldwin biplane by fall, due to collapse from excessive strain, at Chicago, Aug. 15.

JOHNSTONE, St. Croix, killed in Moisant monoplane by fall of 1,500 ft. into Lake Michigan, due to engine failure, at Chicago, Aug. 15.

RIDGE, Theodore, killed by fall of 50 ft. at Farnborough, Eng., Aug. 18.

ZOLOTNEHIN, Lieut., killed at St. Petersburg, Aug. 29.

FRISBIE, J. J., killed by fall at Norton, Kan., Sept. 1; went up in a crippled machine because crowd called him a faker.

DE GRAILLY, Lieut. Jacques, burned to death when machine took fire in midair at Rigny-le-Nonneuse, Fr., Sept. 2.

DE CAMINE, Capt., killed in monoplane by fall at Nangis, Fr., Sept. 2.

MARON, Pierre H., killed in Savary biplane by descent in darkness at Chartres, Fr., Sept. 2.

LEFORRESTIER, M., killed in self-built machine by fall of 200 ft. at Huelva, Spain, Sept. 4.

NEUMANN, Lieut., and passenger, M. LECONTE, killed in fall of Aviatik biplane, Sept. 7.

TENAUD, Carlos, died Sept. 7, from injuries received in February in Peru.

SENGE, Paul, killed by fall of 300 ft. at Frankfort, Sept. 7.

EYRING, Raimund, killed at Stuttgart, Ger., Sept. 9, through colliding with a flag pole in darkness.

CHOTARD, Lieut., killed by fall of 300 ft. at Villecoublay, Fr., Sept. 12.

NIEUPORT, Edouard, crushed during hard landing, Verdun, Fr., Sept. 15; died the following day.

DEPASSE, Hector, killed at Ville d'Avray, Fr., Sept. 16.

CAMMELL, Lieut. R. A., killed in Valkyrie monoplane by fall of 30 ft., due to side-slip, at Hendon, Eng., Sept. 17.

ROSENBAUM, Louis, killed by 600 ft. fall at DeWitt, Ia., Sept. 19.

MILLER, Frank H., burned to death in his biplane at Troy, O., Sept. 22.

CASTELLANE, Tony, killed by fall of 500 ft. at Mansfield, Pa., Sept. 22.
CLARKE, Dr. Chas. B., killed through inexperience in Queen monoplane at Garden City, L. I., Sept. 25.
ENGLEHARDT, Capt., killed at Johannisthal, Ger., Sept. 29.
DIXON, Cromwell, killed in Curtiss biplane by fall of 100 ft. at Spokane, Wash., Oct. 2.
LEVEL, ——, fell 250 ft. at Rheims, Fr., Oct. 14.
SCHMIDT, Hans, burned to death in midair at Bern, Switzerland, Oct. 14.
ELY, Eugene, killed in Curtiss biplane at Macon, Ga., through losing control, Oct. 19.
DESPARMET, Jean, fell 600 feet at Rheims, Oct. 27.
CHOTARD, Lieut., killed in capsize at Villecoublay, France, Sept. 12.
LEVEL, Rene, died Oct. 13, from effects of fall the previous day during military trials at Rheims, France.
TACHS, ——, killed by fall at Lunebourg, Germany, Oct. 22.
MONTGOMERY, John J. Jr., killed while experimenting with glider at Santa Clara, Cal., Oct. 31.
DESPARMET, ——, killed by 600-ft. fall in Blériot monoplane, Nov. 1, during military trials at Rheims, France.
SCHRINEACK, ——, killed by 700-ft. fall at Pilsen, Austria.
PLETSCHKER, Jos., killed by fall of 150 ft. in Albatross monoplane at Johannisthal, Germany, Nov. 15.
SCHRIVER, T. C., killed by 200-ft. fall in Baldwin biplane at Ponce, P. R., Dec. 3.
REEB, ——, killed by fall during cross country flight from Munich, Ger., Dec. 3.
OXLEY, Hubert, aviator, and WEISS, Robert, killed by fall at Scarborough, Eng., Dec. 6.
LORINGHOVEN, Baron von F., killed by fall at Doeberitz, Germany, Nov. 25.
DE CROCE, Humbert, killed by fall at Turin, Italy, Nov. 26.
MOSCA, ——, passenger of Lieut. Nittnej, killed at Wiener-Neustadt, Austria, Dec. 1.
LANTHEAUME, Lieut. Chas., killed by 1,500-ft. fall at Etampes, France, Dec. 13.

Industrial Progress.—During the first nine months of 1911 104 companies were incorporated, their total capitalization being over $11,300,000. Many of these companies were organized for the holding of meets and for exploitation purposes, and it is evident that it is in this branch of aviation that the greatest profits are made. Sales of aeroplanes are made almost exclusively to exhibitors, and the limited number of these does not offer a satisfactory field to manufacturers. In Europe the situation is on another footing, remarkable profits being shown by the successful makers. The Blériot company during the year 1910 showed a net profit of $66,800 on a capital of $260,000; the makers of the Gnome engine made $459,358, which is nearly double their capital of $240,000, and Henry Farman cleared $138,106 from May, 1910, to May, 1911.

Technical Progress.—The successful aeroplanes of 1911 show no important changes over those of 1910, the improvements being in the perfection of details and accessories. Announcement was made of the Doutre stabilizer, but while this promises well for the future, it has not as yet been sufficiently tested to make its position sure. It is the purpose of the device to keep an aeroplane steady, regardless of the action of air currents, and it accomplishes this through the varying pressure of the air on a plate supported by springs. The relation of this plate to its casing, and also the movements of other parts, acts on an air cylinder that controls the position of the ailerons and stabilizing surfaces. Tests of the apparatus have so far been satisfactory.

During Oct., 1911, the Wright Brothers conducted a series of gliding experiments with the object of rendering an aeroplane more self-sustaining than was then the case. On Oct. 18 Orville Wright made a glide of 1 min. 15 sec. and remained stationary for a period of 5 sec. He later remained in the air for 10 min. and also stood still for over 5 min.

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INDUSTRIAL MANAGEMENT

CHARLES BUXTON GOING

Public Interest.—Unquestionably the most significant movement during the year 1911 in any way concerning industrial engineering has been not an internal development, but an external change—a very great increase of public interest in the scientific aspects of industrial organization and management. The result is a much clearer definition than existed before of the difference in concept between "scientific management" and "ordinary industrial management," and of the differences in doctrine between the leading schools of scientific management. These differences do not affect fundamental ideals and principles, upon which all schools are substantially agreed, but only the institutions, methods and devices by which these principles are to be carried out. They are differences of ritual rather than of creed. But as ritual is visible, while creed is not—as most men grasp methods and devices more easily than principles, the differences are, after all, of far-reaching effect. The success or failure of any system of management, whether as to employers or employees, depends on its appeal to human nature. In this psychical aspect the schools differ widely. Therefore an important step has been made in arousing the inquiry by which the differences have been discerned and will be made increasingly clearer.

The Freight-Rate Hearing.—This remarkable awakening of public attention is to be traced to an event occurring just at the close of the preceding year—the railway freight-rate hearing before the Interstate Commerce Commission at Washington, D. C. In this case Louis D. Brandeis, counsel for the Traffic Committee of the Trade Organizations of the Atlantic Seaboard, based his opposition to the proposed advance of freight rates on the theory that what he then (it is believed for the first time) termed "scientific management"

had produced results in industry unlike, not only in degree, but in kind, anything formerly attained; and that until American railways had adopted the principles and methods characterizing "scientific management," and secured its treble advantages: (1) decreased cost of production; (2) lowered price to the consumer; and (3) increased compensation to the worker, they had not exhausted the practicable measures of self-help and should not impose the wastes of their own inefficiency upon the public.

In the course of testimony both as to the principles and practice of "scientific management," and as to preventable wastes existing in its absence, Harrington Emerson repeated a calculation which had been published two years previously, that the preventable losses in American railway operation exceed $1,000,000 a day. This statement, already familiar enough to the comparatively small number already interested in the subject, was given dramatic and country-wide announcement by the daily press; and the resultant somewhat excited attention, perhaps more often hostile than friendly, gave the topic a prominent place in the forum of public debate—a place which it still holds.

The Nature of Scientific Management.—One of the most important results, then, in the history of industrial management during 1911 is that an active and searching survey has established a perspective by which the nature and characteristics of "scientific management"—of the efficient direction of industrial effort—may be more exactly discerned. Nevertheless it is unfair to a great subject to attempt even to sketch these characteristics in a few words. The reader should seek them in some of the fuller expositions listed in the accompanying short bibliography. Briefly, however, the basic idea is that under the ordinary form of organization, authority, responsibility, and special knowledge of the work to be done are all supposed to be distributed in a proper and necessary proportion by one system of repeated sub-divisions—by progressive steps of rank and office. The result too often is that the actual processes are determined, and the efficiency with which the work is done is measured, by the very limited intelligence and very limited powers of the man at the bottom. The newer doctrine teaches the separation of mere discipline and direction from the skilled knowledge of how the work should be done. It establishes parallel and interrelated forces, one for authority and control, another for instruction and guidance. The work, and the methods of doing the work, are planned by the best special talent obtainable. The methods determined upon are reduced to permanent instructions; the appliances are so standardized that the predetermined standards of efficiency can be secured; the workman is instructed in each step leading to the desired result; finally, an additional compensation above the established rate of wages is offered as an incentive to secure the workman's coöperation.

Four Schools of Industrial Thought.—The active survey above referred to has defined also at least four schools of industrial thought, which, accepting the same fundamental principles, seek to carry them out by different methods. These are: first, the Taylor school, under which the long-familiar form of organization is discarded and replaced by eight functional lines operating in parallel, or rather by two groups of four functional lines each, operating in series; second, the Emerson school, in which ordinary line organization is left unchanged, but an efficiency staff is introduced to care for equipment, materials, processes, working conditions, and to furnish expert counsel to the line at every step; third, the Carpenter school, in which a series of progressive staffs is formed by committee groupings of the ablest members of the line; fourth, the Hine school of "unit organization," under which the centralizing tendencies of the time, with the resultant loss of detailed control, are counteracted by developing the responsibility of component units through minor modifications, which, as in the Carpenter system, fix staff as well as line responsibility upon individuals near enough to the task to direct the efficiency with which it is performed.

The practical results, which, of course cannot be specifically reported, have been the institution in a large number of manufacturing establishments, and departmentally in some few railways, of active measures for the establishment of more efficient practice. The most significant of all has been the appointment by the Secretary of the Navy of an efficiency commission consisting of three leading counseling engineers (Harrington Emerson, H. L. Gantt and Charles Day) to examine into conditions in the bureaus, the yards and the fleet, and to report upon existing efficiency and measures for its betterment, in the light of advanced knowledge of efficiency principles and their scientific application to the management of practical affairs. (See also XXI, *The Navy.*)

Conferences.—Public events of note have been the many meetings at which advanced views of industrial management have been presented by its advocates, and in some cases attacked by its antagonists. Such were the meeting held under the auspices of the Civic Forum at Carnegie Hall in April, 1911, the conference at State College, Pa., appointed for July, but afterwards postponed, and the conference held under the auspices of the Tuck School of Business Administration at Dartmouth College in October, 1911.

Associations.—Institutional recognition of the new movement during the past year was exhibited, first by the appointment by the American Society of Mechanical Engineers of a Committee on Economic Administration of Industrial Establishments; second by the larger and more comprehensive undertaking for the formation of the American Society for Promoting Efficiency. This new society, under the guidance of a large number of prominent men (publicists, financiers, managers of manufacturing and trading enterprises, professional advisers, and educators) came into organized existence in Dec., 1911.

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NAVAL ARCHITECTURE AND MARINE ENGINEERING

DANIEL H. COX

Shipbuilding.—In this country the one notable feature has been the very marked revival in shipbuilding, more particularly of combined passenger and freight vessels of about 400 ft. in length designed for the coasting trade; this activity is undoubtedly caused by the Panama Canal situation, as beyond all question the opening of this Canal will mean an enormous increase in available freight; and as by law coastwise freight must be carried in American bottoms, and as the existing vessel tonnage of American register is lamentably lacking both in carrying capacity and speed, the only solution is new construction. Shipbuilding on the Lakes shows a moderate and healthy activity in the building of freight carriers, and the Lake passenger fleet is to have a noteworthy addition by the completion of a magnificent steamer that will surpass in size and appointments the largest of the already famous vessels now running on the Hudson River and Long Island Sound.

Increase in Size of Vessels.—Sir William H. White, K. C. B., presented an interesting paper at the Annual Meeting of the Society of Naval Architects and Marine Engineers, held in New York, under the title "The Maximum Dimensions of Ships." The following extracts from this paper will illustrate the author's views on this subject:

> It will be agreed that the law of growth in dimensions has operated hitherto on all classes of ships and that its action has on the whole been beneficial. . . . It must be noted, however, that, notwithstanding the remarkable developments of the last ten years, the number of ships of extremely large dimensions is relatively few. . . . It is a fact worth noting that ships of the maximum dimensions now built or building are not easily accommodated or moved in even the largest docks and harbors.
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> Ocean waves have not grown in size because larger ships have been built; and obviously there must be an upper limit of size, beyond which, so far as maintenance of speed is concerned, further increase in the dimensions of ships will have little or no effect upon regularity of performance of service between terminal ports. I have previously recorded my opinion that this upper limit of size has been reached for the Trans-Atlantic service in the *Mauretania* and her sister ship. . . . . Larger dimensions are not essential to good behavior at sea, and increase in length and weight beyond the *Mauretania* is not necessary in order to secure maintenance of speed on long ocean passages. It would appear, therefore, that the main determining

factor in regard to maximum dimensions for future mercantile vessels must be found on the commercial side and not on the technical.

There is much that can be said on both sides of this question, and the general feeling seems to be that so long as the terminal and docking facilities as to length and depth of water are not exceeded a further gradual increase in size both of merchant and war vessels of the largest type may be confidently anticipated.

The "Olympic."—In connection with the subject of size of vessels the following details of the *Olympic*, which was added to the transatlantic fleet this year, are worthy of attention:

Tonnage, registered	45,000
Tonnage, displacement	66,000
Length over all	882 ft. 6 in.
Breadth over all	92 ft. 6 in.
Breadth over boat deck	94 ft.
Height from bottom of keel to boat deck	97 ft. 4 in.
Height from bottom of keel to top of captain's house	105 ft. 7 in.
Height of funnels above casing	72 ft.
Height of funnels above boat deck	81 ft. 6 in.
Distance from top of funnel	175 ft.
Number of steel decks	11
Number of watertight bulkheads	15
Passengers carried	2,500
Crew	860

While referring to these numerical details, it may be well to point out that the largest plates employed in the hull are 36 ft. long, weighing 4½ tons each, and the largest steel beam used is 92 ft. long, the weight of this double beam being 4 tons. Further, the rudder, which is operated electrically, weighs 100 tons, the anchors 15½ tons each, the center (turbine) propeller 22 tons, and each of the two "wing" propellers 38 tons. The after "boss arms," from which are suspended the three propeller shafts, tip the scales at 73½ tons, and the forward "boss arms" at 45 tons. It is also interesting to note that each link in the anchor chains weighs 175 lb.

This immense vessel has attracted much attention since she has been placed in service and her popularity is another argument for those who claim that the "largest ship" is a thing to be desired.

Oil Engines.—The investigation and development of the many types of internal-combustion engines using heavy oil as fuel continue to be given the most careful consideration by marine engineers in all parts of the world. The following extract from a paper presented before the Society of Naval Architects and Marine Engineers by G. C. Davison calls attention to the enormous increase in use of this type of motive power:

It has been estimated that over 250 vessels in the world are to-day fitted with oil engines. Submarine torpedo boats form a large part of this number. These vessels usually have from 600 to 2,000 h. p. France is now constructing submarines which have two oil engines of 2,500 h. p. each. Russia has had gunboats of 600 h. p. each for several years. Italy is building a torpedo boat destroyer equipped entirely with oil engines. England has ordered a destroyer having an oil engine for cruising purposes and steam turbines for high speed. Germany is reported to have an engine of 12,000 h. p. for use on one of her latest battleships for cruising purposes. Austria has a cruiser with two 900 h. p. two-cycle engines. The foregoing does not pretend to be a complete list of what foreign navies have already done in connection with these engines.

In the merchant marine the following instances may be mentioned: In Russia a number of tank steamers have been running on the Black Sea for the past few years, using oil engines of about 600 h. p. In France the barque *Quivilly*, fitted with two 300 h. p. Nuremburg engines, has crossed the Atlantic three times and her engines have been pronounced a great success. The owners of this vessel are now building another ship to be fitted with still larger engines. Other vessels with oil engines are in daily use in that country.

In Germany the firm of Blohm & Voss has already finished a 7,000-ton ship to be equipped with two engines of 1,000 h. p. each. These are the first double-acting two-cycle oil engines ever built, having been designed by the Nuremburg branch of the Maschinenfabrik Augsburg-Nürnberg A. G. One of these engines was built by Messrs. Blohm & Voss, the other at Nuremburg. These engines are heavy and strongly built and run at a slow speed—125 r. p. m. They have but three working cylinders.

On account of the success obtained with these engines Messrs. Blohm & Voss are now building a cargo vessel of 11,000 tons. The engines for this ship

are 1,500 h. p. each, and work on them is well under way.

There is no question that the development of this type of engine is certain in a few years' time to be of such importance as to insure its use for a large number of vessels. At the present time only the unfamiliarity with the type of engine and the natural disinclination on the part of vessel owners to venture into the experimental field deter many from taking advantage of its obvious claims for merit.

Steam Turbines.—The turbine engine for marine propulsion continues to make rapid inroads into the field of the reciprocating engine, particularly in the case of naval and other vessels designed for specific purposes. An excellent illustration of this fact is shown in the following extract from a paper recently read before the Society of Naval Architects and Marine Engineers by E. H. B. Anderson, in which one type of turbine only, the Parsons, is discussed:

> In 1905 the total amount of Parsons turbine machinery of the marine type completed, amounted to about 270,000 h. p. At the present time the total horsepower completed, and under construction amounts to approximately 6,400,000, of which about 5,300,000 is to be fitted in warships; of this total 1,900,000 horsepower has been ordered during this year (1911.)

Careful investigation continues to be made of the best arrangements of the turbines for various types of vessels and a thorough study of the conditions has made possible very considerable improvement in efficiency and economy in operation. The various possible combinations of turbines and reciprocating engines with a view to greater economy by the use of the latter for cruising purposes continue to be carefully investigated and much progress has been made along these lines.

Mechanical Gearing.—The use of mechanical gearing in connection with turbine engines with a view to securing the greater propeller economy possible with the reduced revolutions is being followed with much interest. The collier *Neptune* of the U. S. Navy is fitted with geared turbines and while the results of the final trials have not been made public, the information at hand seems to indicate that the installation is a success.

XXXIII. RELIGION AND RELIGIOUS ORGANIZATIONS

H. K. Carroll

THE ROMAN CATHOLIC CHURCH

The Roman Catholic, by far the greatest Christian communion in numbers, is also most widely diffused throughout the world, and is, perhaps, the most highly organized. Its hierarchy, graduating upward from priest to bishop, to archbishop and patriarch, to cardinal, to Pope, rules over a Church embracing representatives of practically all races, tribes and tongues. If another Ecumenical Council were summoned, such as that held in 1870 in the reign of Pope Pius IX, and all were able to respond, there would be a concourse of thousands of prelates. The number grows year by year.

The Curia.—Head of all is the Pope, who governs the entire Church, and is also Bishop of Rome, Archbishop of a province, including Rome and several other dioceses, and the successor in the primacy of St. Peter, according to Catholic tradition. The Pope is assisted in the government of the Church by the College of Cardinals, who meet from time to time for important governmental business in consistory, and of whom various bodies called congregations are constituted, as of the Inquisition, which deals with heresies; of the Index, which censors books; of Rites, which supervises worship, canonization, etc.; of Indulgences and Relics, which has charge of these matters; of Bishops and Regulars, which has oversight of bishops and monastic orders; of Penitentiaria, which considers questions of conscience; of the Chancery, controlling records and finances; of the Propaganda, which concerns itself with missionary work. Then there is the Cardinal Secretary of State, who represents the Pope in relations with civil governments and with the church in those countries where it has full organization, as in Germany, Great Britain, and the United States.

Cardinals are the highest dignitaries of the Church, next to the Pope. They rank as princes of the Church, and are distinguished by the red hat, the red robe and the title of Eminence. They elect the Pope in conclave. The complement of the College is 70, six of the order of bishops, 50 of the order of priests and 14 of the order of deacons. All countries in which the Church is fully established are supposed to have representatives in the College, though Italy has by far the largest number.

American Cardinals.—The Roman Catholic Church in the United States was first honored by representation in the College when Archbishop McCloskey, of New York, was raised to the rank of Cardinal in 1876. Archbishop Gibbons, of Baltimore, was appointed in 1886, and Archbishop Satolli, who for ten years had been Apostolic Delegate in the United States, received the same honor in 1896. Cardinal Satolli left for Rome immediately, and, as Cardinal McCloskey had died in 1885, there has been in reality but one cardinal in this country at any time since 1876. Meantime the Church has grown in numbers, in priests, bishops and archbishops, in influence, wealth and efficiency, and the Pope has, from time to time, intimated that nowhere has the Church been more loyal and given him more satisfaction than in this land where, if there has been no concordat to bind the State to the Church, there have been no governmental complications as in France,

Spain, Portugal and other Catholic States, and the Church has been free to work out her own plans.

Status of the Church in America.—Until 1908 the Church in the United States was treated as a missionary Church, that is, not as a Church completely organized under decrees regulating its own internal affairs, as in England, Germany and other countries, but as a Church under the general supervision of the Missionary Congregation, or Congregation Propaganda de Fide. For the last three years it has been recognized as having a complete ecclesiastical status. Its affairs are under the supervision of the Cardinal Secretary of State.

New American Cardinals.—It was long expected that the Pope would honor the Church here with an additional cardinal; but the announcement in October last of his decision to create two new American cardinals came as a surprise. The men selected for the princely dignity were Archbishop Farley, of New York, and Archbishop O'Connell, of Boston. At the same time Monsignor Falconio, Apostolic Delegate at Washington, was notified that the red hat would be conferred upon him. He is a naturalized American citizen, but will, like Satolli, return at once to Rome. Cardinal Farley was born in Ireland in 1842, ordained priest in 1870, served successively as Cardinal McCloskey's secretary, as vicar-general, auxiliary bishop, and archbishop. Since he became the head of the Archdiocese of New York in 1902 he has freed the Cathedral from a debt of half a million dollars, developed the parochial school system to a high degree of excellence, and strengthened the high schools and colleges. Archbishop O'Connell is young for a cardinal. He was born in 1859 in Lowell, Mass., graduated from Boston College, a Jesuit institution, finished his studies in Rome, where he was ordained as a priest in 1884 and as a bishop in 1901. When Archbishop Williams died in 1907, he left the diocese of Portland, Me., to become his successor. Both of these new cardinals are classed as conservative churchmen, in full accord with the policy of Pius X, particularly in his attempt to suppress modernism in the Church. They will continue at the head of their respective archdioceses.

Cardinal Gibbons, the oldest American cardinal, recently observed the fiftieth anniversary of his priesthood. His jubilee sermon received wide attention, particularly his tribute to the constitution of the United States as "the palladium of our liberties and our landmark in our march of progress," and his disapproval of the propositions concerning the referendum, the recall of judges and the popular election of federal Senators.

Other New Cardinals.—Of the 17 new cardinals announced, two are from Spain, four from France, giving to that country seven; one from England, one from Austria, the rest being Italians.

The Ne Temere Decree.—The Papal decree declaring invalid marriages entered into by Catholics unless contracted before the parish priest or ordinary of the place where they are performed, not only of Catholics with Catholics, but of Catholics with those baptized persons who have withdrawn from the Church, or with Protestants, has resulted in numerous protests from Protestant bodies. The decree also affects such marriages of Catholics as may have been performed by other than Roman Catholic priests. In Canada there has been a storm of opposition to the decree, which is interpreted as denying the supremacy of the civil law relating to marriage, the equal rights of all religious denominations before the law on this subject, and as likely to cause disturbance and disaster in duly constituted families. The defense of the decree is that it is intended by the Pope only for his own children.

Separation of Church and State in Portugal.—The Government of the Republic of Portugal, as foreshadowed, has adopted legislation separating Church and State. The new law puts all religious denominations on an equality of rights and privileges. Worship is free to all, and churches may conduct their own affairs, providing their own support. All Portuguese and foreign ministers now in Portugal may continue their

work; but all others must obtain authorization. The clergy are to have possession of the churches. Priests may marry, if they wish to. Foreign Minister Machado announced in January last to Bishop Hartzell, Methodist Missionary Bishop of Africa, that no war on religion would be made; but that all churches would be respected and protected. In the government schools morals and patriotism will be inculcated, but religion will not be taught. The same general policy will be observed in Portuguese colonies.

The Movement Against Modernism.—The attempt of the Pope to repress modernism, as it is called, among the Catholic clergy and teaching force has met with no little opposition. The Papal decree, issued in Sept., 1910, prescribed rigorous measures. Candidates for the priesthood may not read newspapers or periodicals except under supervision; professors of theology must submit to their bishops the text of the lectures they are to give; and all in, or entering, the priesthood, all vicars-general and other officials, all Lenten preachers and all prefects of religious congregations must take the prescribed oath before the proper bishop or other official. The oath affirms unshaken belief, in all the truths of the Church as infallibly proclaimed, and declares that God may be known by the visible works of creation; that the external evidences of revelation are the surest signs of the divine origin of Christianity; that the Church was founded by Christ upon Peter; that the faith as handed down by tradition is one and unchangeable; and that faith is no blind religious sense, but a veritable assent of the intellect to truth. Further prescriptions cover the ground of biblical criticism and a variety of modernist "errors." Some difficulty arose in Germany concerning the Catholic faculties in the universities and the Catholic teachers in the gymnasia. The German government represented that it could not agree that these should be required to take the oath, and an agreement with the Vatican was reached that they should be excepted from the application of the decree. Some French priests announced that they would take the oath, but could not give it their intellectual assent. The clergy in the United States seem to have made no difficulty in subscribing it.

Strength in the United States.—There are 14 archdioceses and 94 dioceses in the United States, 108 in all, not including Porto Rico and the Philippines. There are 16,550 clergy, 13,204 churches, and a Catholic population of 14,347,027. For the training of men for the priesthood there are 82 seminaries, with 6,969 students. The Catholic population includes all baptized persons, young and old; that is, communicants and adherents. The number of communicants is reckoned at 12,194,973. The distribution of Catholic population by states is indicated by the following: New York, 2,758,171; Pennsylvania, 1,527,239; Illinois, 1,446,400; Massachusetts, 1,380,921; Ohio, 694,-271. Louisiana, Wisconsin and Michigan have Catholic populations exceeding half a million each. Catholic immigration is still heavy, and the Church has become, doubtless, the most polyglot communion in the United States.

Catholics and the School Question.—The position of Catholics respecting the public schools is represented by an organization known as the American Federation of Catholic Societies, whose general purpose is the advancement of the civil, religious and social interests of members of the communion. Its aim concerning the public-school system is to keep up agitation until the injustice is admitted of compelling Catholic citizens to support a system which they cannot patronize. Bishop McFaul estimates that the voluntary maintenance by Catholics of their parochial schools saves the United States annually more than $21,000,000, besides the $160,000,000 which would be required to house the Catholic pupils. In behalf of the federated societies, it is said that they cannot patronize the public schools because in them the Protestant Bible is read, Protestant prayers said and sectarian hymns sung; or, where these exercises are not conducted, no religious teaching is given. They can-

not consent that Catholic children shall be deprived of religious instruction in their own faith by properly authorized instructors; hence they maintain at great cost their own parochial schools, while, at the same time, they pay taxes for the support of the public schools. The solution of the question they propose is this: "1. Let our schools remain as they are. 2. Let no compensation be made for religious instruction. 3. Let our children be examined by a state or municipal board," and, if the work done is satisfactory, let payment for the support of the schools be made from the public funds. According to the most recent statistical report, there are 4,972 parishes which maintain schools, with a total attendance of 1,270,131. In addition there are 225 colleges for boys and 696 academies for girls.

THE METHODIST CHURCH

The Ecumenical Conference.—By the term "ecumenical," chosen when the first conference was held in 1881 in London, England, is meant simply world-wide. Baptists and Presbyterians use the simpler word "world," as did also the great Missionary Conference, of 1810, in Edinburgh, which had formerly been called "ecumenical." The followers of John Wesley have been holding ecumenical conferences decennially since 1881. All Churches bearing the name Methodist, or connected historically with the movement, and Methodistic in doctrine, discipline and method, are included in the call for the conference, and the United Brethren in Christ (two bodies), and the Evangelical Association (two bodies), which began in this country among German-speaking Americans, about the opening of the nineteenth century, have been represented in some of the conferences. The Ecumenical Conference has no legislative power whatever. It may express its opinion on questions of common interest, and it may take action which is advisory; but, in the terms of its constitution, it may not vote on any matter "affecting the internal arrangements of any of the several Methodist Churches," and it is pledged to "exclude from discussion all points of doctrine, discipline and Church government regarded as fundamental . . . and as to which any one of the Churches differs from any of the others." The purpose of the conference, briefly stated, is to cultivate closer acquaintance, fellowship and coöperation between all Methodist Churches, to discuss questions of common interest for mutual encouragement and helpfulness, to illustrate the essential unity of all branches of Methodism, and to voice the sentiment of Methodism on great moral causes of international concern.

The Conference is composed of 500 delegates, 200 from the Eastern Section, including the churches of Great Britain, Ireland, France, South Africa and Australasia, and 300 from the Western Section, including the Churches of the United States, Canada and Japan. Representation is distributed among the several branches in the respective sections, according to the number of communicants. In the Western Section, the Methodist Episcopal Church has 140 delegates; the Methodist Episcopal Church, South, 71; the Methodist Church of Canada, 24; the Methodist Protestant Church, 9, and so on. In the Eastern Section, the Wesleyan Methodist Church, the oldest body of all, has 100 delegates, the Primitive Methodist Church, 34, the United Methodist Church, 30; the Australasian Methodist Church, 16, and so on. The preparations for the conference were in the hands of executive committees representing the two sections, and were begun in July, 1909.

The Fourth Conference.—The conference met in the Metropolitan Methodist Church, Toronto, Canada, Oct. 4, and closed Oct. 17. It embraced 26 sessions and 8 meetings and preaching services. Four secretaries were elected and there were as many presidents as there were sessions and meetings. The program called for a 20-minute essay for each session, with two appointed addresses of ten minutes each, and an hour or more was devoted to general discussion in five-minute speeches. Each

topic, therefore, received full consideration, and it was not difficult to ascertain which way the weight of opinion and conviction inclined. The opening sermon, by the President of the British Wesleyan Conference, interpreted the social upheaval and other signs of the times as indicative of the harvest described by the Master and called for a larger sympathy with humanity, a wider catholicity, which shall do away with harshness and narrowness, and admit many to the Church who are now left outside. The space occupied by the conference in these pages is more than the importance of the gathering warrants, perhaps; but, as the proceedings afford an unusual opportunity to ascertain the conditions, problems and progress of a world-wide communion of 33,000,000 population, and as this communion is a fairly representative Protestant communion, the attention given it may be justified.

Decline in Rate of Growth.—The surveys of Methodism in the past ten years were frank in admissions of unsatisfactory results in Church growth. In the Western Section there had been a net increase for the period of 974,000 members, or 15 per cent., as against an increase in the previous decade of 1,412,000, or 28 per cent. There had been no absolute decline, but there had been a serious decline in the rate of growth. This was attributed to the passing of the revival. There are still revival campaigns, but they do not produce the results of former times. The new methods of child training in the Sunday School bring the youth into the Church; but comparatively little is done to reach unconverted adults. A decline in earnestness, in zeal, and, in some degree, of conviction as to the dangerous condition of the sinner was the main cause, it was urged, of decrease in rate of growth. The machinery of the Church was never so complete. It has been perfected by a combination of the wisdom of the fathers with the scientific precision of the age; and what is most needed is not more legislation, more machinery, more institutions and more equipment, but a deeper, more pervading, spiritual life.

In the Eastern Section, Methodism in Great Britain had, it appeared, small increases to report for the decade, but these were confined to the first half of the decade. In the last five years the Wesleyan (parent) body had suffered a decrease of 13,000 members, and a similar tendency was shown by the other branches. There were changed conditions outside the Church, but there was an apparent weakening of the church forces in meeting those conditions. There was no disposition to hide or explain away the facts; but an honest determination to acknowledge and meet them. The finances of the churches were flourishing, as in the Western Section, and great sums of money had been raised for new church buildings and improvements.

Church Work in Cities.—The problems in the centers of population in Great Britain and the United States were set forth by experts, also of the rural communities. Migration and immigration, the multitudes of polyglot foreigners, the up-town movement of church members, the terrible congestion of the foreign quarters, the condition of the ill-housed, ill-fed slum residents, the institutional church and settlement work—these and many other questions pressing for solution were discussed in a large, broad, humanitarian spirit. The city presents the regeneration of the worst, the uplift of the lowest, the rights of childhood to mental and spiritual training, the housing of the multitudes for worship, the interpretation of the Gospel to every kind of man, the search of justice for the oppressed and of relief for the poor—these and many other questions challenge the Church, and the burden of the discussion was that no more urgent problem confronts the Church in the United States than the care of the masses in the city. There was a call for a new policy of concentration, allowing for statesman-like leadership; for legislation adequate to present-day conditions, even if it breaks with the traditions of the past; for administration which puts the stress not on forms but on forces, and coördinates and unifies; for coöperation with other denominations for social and

civic betterment; for the training of men and women for specialized service; and for liberal means to prosecute a broad, effective program. The claims of the social settlement were recognized, not as a church or a mission, but as a social service, unsectarian, humanitarian, disinterested. It must, however, be inspired and directed by religious enthusiasm; otherwise it will not survive the shock of repeated contact with ignorance and iniquity.

Social Service.—This form of work was recognized in the program, and it was declared to be the duty of the Church to adopt a plan with these distinct elements: 1. *Preventive*, as applying to children and youth, whom the Church must keep by providing right educational facilities and conditions, wholesome domestic relations, better housing, better homes, better food better cooked. 2. *Remedial.* No case must be regarded as hopeless. Get at a man through his conditions, or get at his conditions through him. Conditions and surroundings must be studied that they may be improved. This social work must be spiritual, and this spiritual work must be social. 3. *Constructive.* The Church's aim must be so to present the Gospel that the creature will become a new creature, to adapt its work to various sections of the people and to a variety of conditions. Socialism has become a mighty force and Christians must learn to use it to build a new and better society. The Church must not stand for a privileged people, with the masses in the attitude of unprivileged and disinherited people, because it is the masses for whom Christ died, and it is those without a Shepherd he specially calls. A woman who went from intellectual Cambridge to the slums of London and who lived in them the past nine years, said "drink, disease and dirt" make men and women old at 30, deprive children of child life, and reduce the many to starvation.

Methodist Evangelism.—The change that has taken place in evangelistic methods was clearly recognized. Great revival campaigns, such as Mr. Moody used to conduct, are not now conducted. The chief recruiting field for new church members is among the children and youth. The Sunday school is the foremost agency and the widest door into the Church. This is formative evangelism; what about reformative evangelism? It was in this that Methodism won its early victories, and of adult converts that it built up its world-wide constituency. The paper on this subject insisted on a clear and definite presentation of the essential truths of the Gospel, which time does not change, as necessary to produce clear and definite religious experience. The doctrines which won in Jerusalem, Antioch and Rome will win in London, New York and Toronto. In the discussion no new plan to take the place of the old method of reaching unconverted adults was outlined. It was admitted that the unconverted do not attend the revival meetings held for their benefit and that this is why these meetings are less successful than formerly.

Methodist Union and Coöperation.—This was one of the dominant notes of the conference. In the past decade there had been a union of three Methodist Churches in Great Britain in one body, the United Methodist Church; but the number of Methodist branches in the United States has not been reduced. There are nine distinct branches in the Eastern Section, four of which are due to geographical separation, and 21 in the United States and Canada. It was pointed out that Methodist union in Canada followed the first Ecumenical Conference; Methodist union in Australia the second, and Methodist union in England the third. There is pending in Canada a union of Methodists, Presbyterians and Congregationalists. This project came somewhat into the discussion; but it was not welcomed by the delegates outside of Canada. The prevailing opinion seemed to be that the resultant body would be neither Methodist nor Presbyterian, and that both Methodism and Presbyterianism would lose somewhat by change of method and usage. There are no immediate prospects of union in the United States. Commissions are considering whether closer rela-

tions, by federation or union, can be established between the two largest bodies, the Methodist Episcopal and the Methodist Episcopal, South, and whether the Methodist Protestant Church might not come in also; but nothing definite is announced. Three bodies of Colored Methodists, having a total of a million and a quarter of communicants, have formed an extra-official board, consisting of bishops and general officers, which meets triennially and considers matters of common interest. Commissions are also inquiring into the possibility of the union of the Free Methodists and the Wesleyan Methodists, which together have about 50,000 members. The Ecumenical Conference was overwhelmingly in favor of the lessening of Methodist divisions, if the trend of the discussions may be so interpreted. It was held that union would give greater results at less outlay of labor and means, prevent over-occupation of some communities, under-occupation of others, do away with denominational rivalry and strife and consequent waste, and insure the greatest economy in the use of forces and means and the greatest concentration of energy. Co-operation in educational, missionary and other enterprises was also warmly commended.

The Higher Criticism.—A paper on the "Permanent Results of Biblical Criticism" was contributed by a theological professor of Great Britain. It took what seemed to most American delegates advanced ground, accepting as fairly established the division of the Pentateuch into four documents; the composite authorship of Isaiah, Job, Proverbs and the Psalms; and the two-document theory of the first three gospels. Doubt was expressed as to the apostolic authorship of the fourth Gospel and of the authenticity of I Peter. The speakers from the Eastern Section sustained the positions taken in the paper almost without exception; the speakers from the Western Section were divided, and probably two out of three of the American delegates were not in sympathy with the conclusions of the paper, though doubtless all would stand for freedom of investigation along legitimate lines and by legitimate methods for the truth.

An Ecumenical Commission Provided.—By a practically unanimous vote, the conference decided that the results of its decennial meetings should not be allowed to lapse, but should be conserved and extended during the intervals. It, therefore, provided for an Ecumenical Methodist Commission with Eastern and Western Sections of 50 members each, the two sections to unite in organizing a Methodist International Commission. The function of the Commissions is "to gather and exchange information concerning the condition, progress and problems of the various Methodist Churches, to promote closer fellowship and co-operation between them, to further great moral causes affecting the peace and welfare of our respective countries, and to make arrangements for the next Conference."

Fraternal delegates representing the National Congregational Council, the Baptist World Alliance and the Presbyterian World Alliance were cordially received and their messages of fraternity and good-will heard with interest.

It appears that Methodism in the whole world has 55,808 ordained ministers, 99,499 churches, 8,768,616 members, and 32,728,579 population, including members and adherents.

The Free Methodist General Conference.—This is one of the smaller Methodist branches which emphasizes the disciplinary requirement of plain living and the doctrine of holiness. It has bishops, or general superintendents, whose term of office is four years, but who are eligible to reëlection. This Church preserves the peculiarities of Methodism in doctrine, discipline and usage. Its general conference meets quadrennially. Its last session was in Chicago in June, 1911. Four of the five bishops were reëlected; Bishop Hart, after serving 34 years, retired. A missionary bishop, the Rev. J. S. MacGeary, was elected for Africa and India, where the Church has flourishing missions. This is a new feature in the Church's plan of su-

pervision. The Conference elected three general evangelists. There have been negotiations with the Wesleyan Methodist Connection, a small body of similar spirit and aims, for closer relations. The commission was continued and Bishop Pearce was chosen fraternal delegate to the Wesleyan General Conference. The question of the ordaining of women was a subject of discussion, the outcome of which was an action permitting an annual conference, when persuaded that "any woman is called of God to preach the Gospel" to receive her on trial and into full connection and ordain her a deacon, just as men are received; but such ordination to the diaconate "shall not be considered a step toward ordination as an elder." Musical instruments in church worship are strictly prohibited. A resolution to remove the restriction was "killed by the committee on revision inside of one minute after the proposition had been read," and a proposition to change the name of the Church to "Christian Pilgrim Church" was also promptly voted down. An amendment to deprive the bishops of voice and vote in the General Conference failed to carry the Conference, although favorably reported by the revision committee.

THE BAPTIST CHURCHES

The Baptist World Alliance.—The Baptists, having a congregational or independent polity, which makes each local church supreme in the management of its own affairs, constitute denominations only as the independent units come together in associations and conventions for cooperation in purposes and work in which they have a common interest. The causes which divide them into separate denominations are chiefly doctrinal and geographical. The Baptists of England and Canada, for example, are separated from each other and from the dominant branches in the United States by the sea and the national boundaries. The larger bodies in the United States are separated into Regular, Free-will, General and other similar Baptist branches by doctrinal differences. The Northern Baptists, the Southern Baptists and the Colored Baptists, which affiliate with English and Canadian Baptists, are Calvinistic in doctrine, the Northern branch moderately so, the Southern body more strictly. Each of these three general bodies has its own missionary work, home and foreign, and other denominational interests, and holds annually a General Convention. There are in the South and Southwest Primitive Baptists and some smaller bodies, which are more rigidly Calvinistic in doctrine and are opposed to modern ideas, such as missionary and Bible societies. These do not coöperate with the larger bodies above described.

The First Conference.—Five years ago there was held in London, England, the first congress of the Baptist World Alliance, including Baptists of Great Britain, Canada, and the United States, and of their several mission fields in Europe, Asia, Africa and America. The purpose of this World Alliance is simply to emphasize the general agreement of Baptists of the world in doctrine, principle and in efforts for the evangelization of all races, as represented by the words, "fellowship, coöperation, service." The congress has no ecclesiastical power whatever and its resolutions and declarations have no force except in so far as they may command the assent and secure the coöperation of the Baptist churches which they concern.

The Second Conference.—The second world's gathering of the Baptist World Alliance was held in Philadelphia, June 19-25, 1911. The bodies represented were the Northern, Southern, Colored and Free-will of the United States and those of Canada, Great Britain, Australia and certain missionary countries. It was preceded by the convention of Northern Baptists and the general convention of Baptists of the United States and Canada. The congress brought to Philadelphia Baptists from the ends of the earth, representing some 60 nationalities. There were 2,500 delegates from the United States and 500 from foreign lands. They were marshaled to their seats

in the Baptist Temple under banners indicating their respective countries. The executive committee, which prepared for the congress, consisted of representatives of ten countries. The general topic was "Baptists and the World's Life," and the Christianizing of the world occupied many sessions.

Russia.—A feature of the congress was the presence of some 30 delegates, men and women, from Russia. Many of them had suffered much persecution before the Czar granted a measure of tolerance. One of them, Pavloff, of Odessa, was twice sent to Siberia, was confined in the "inner prison," and put to work in the Ural mines. He has made 6,000 converts in Ashchachad. Another, Stefanoff, spent five years in Siberia and two attempts were made to kill him. Dustromen, formerly a Cossack, became a Baptist in 1884, and soon after was deprived of all his civil rights. He was beaten, loaded with chains and imprisoned nine years. These cases all occurred before tolerance was declared in Russia. Present conditions, however, are said not to be satisfactory. Persecution by Russian officials is common, under the mistaken idea that the converts are hostile to the government. The need of a Baptist educational institution in Russia to train preachers was presented to the congress as urgent; a fund to start it of $100,000 was inaugurated, and two-thirds of it was raised in Philadelphia. A deputation of Alliance officers is to visit the Czar, assure him of the loyalty of the Baptist converts, and ask him for a larger measure of religious liberty.

Young People's Work.—To consider and report what is necessary to the greater efficiency of young people's work, and how it may be extended to all other countries, a committee of 25 was appointed. There has been a Baptist Young People's Union, working in harmony with the Christian Endeavor Society, for 20 years, its object being the training of young people in Baptist history, principles and methods. The committee is to take a survey of the world and see whether the Union cannot serve Baptists of other lands and races as it has served those of America.

Social Progress.—The congress also appointed a committee of 15 on social progress. It is to ask other religious bodies to appoint similar committees, which shall plan such concerted action as shall destroy the moral evils which afflict all peoples.

Christian Unity.—A resolution creating a committee to labor for the unification of Baptist missionary work throughout the world, not by uniting all foreign mission boards, but by coöperation, was adopted, also a paper concerning Christian unity. The preamble to the latter recognizes a widespread feeling that divisions in the Church have served their purpose and should give way to closer cooperation, acknowledges a growing sense of brotherhood in Christ and asserts the great principle of "free and personal faith, with liberty of conscience in matters of belief and worship," for which Baptists have always stood, as the heritage of the whole Christian world. The resolution declares that Baptists are ready to enter gladly "into a conference of all churches of Christ, looking to a more perfect mutual understanding and a clearer insight into the mind of our Savior," and provides for a committee of five to meet and act with representatives of other Christian bodies for this purpose. This is in response to actions already taken by the Protestant Episcopal General Convention and the National Congregational Council.

Officers of the Alliance.—The retiring President, Dr. John Clifford, of London, in his address dwelt upon the essential unity of Baptists, declared that the day of the people had dawned both in State and in Church, and insisted that "our Baptist churches are, by the principles they avow and the ideas they hold, charged with a responsibility second to none, for inspiring, directing and shaping the religion of the future." The Rev. Robert Stuart MacArthur, D.D., pastor of Calvary Baptist Church, New York City, was elected president of the Alliance to serve five years. He has resigned his pastorate and will give his entire time to the work of the Alliance.

Strength.—The Baptists represented in the Alliance number 6,283,833 members, with 58,235 churches. Of the members, 5,670,000 are in North America, 583,000 in Europe, 181,000 in Asia, 15,000 in Africa, 27,600 in Australasia, and 7,400 in South America.

THE PRESBYTERIAN CHURCH

The Grant Heresy Case.—The Presbyterian Church in the United States of America is popularly known as the Northern Presbyterian Church. There was before its General Assembly, which met in Atlantic City, N. J., in May last, a heresy case. It came on appeal from the action of the Judicial Commission of the Presbytery of Northumberland, Penn., in the case of the Rev. William D. Grant, Ph.D., in acquitting him on certain heresy charges. The Permanent Judicial Commission of the General Assembly, which passed the case in review, on appeal, found that the defendant failed to ascribe to Christ attributes which belong to Him as the Son of God; that he disparaged faith in the existence of Christ's mediatorship; and that he impugned the veracity of the Scriptures of the Old and New Testaments and divested them of authority. The commission, therefore, reversed the findings of the presbyterial commission, found the defendant guilty as charged above and sentenced him to suspension from the functions of his ministerial office until such time as he shall satisfy the Presbytery of Northumberland of his renunciation of the errors of which he has been convicted. The report, with findings and sentence, was affirmed by the General Assembly.

Union with the Reformed Church.—A plan of union of the Presbyterian and Reformed (German) Churches is now under consideration by the presbyteries of the former and the synods of the latter, having been approved and sent down by the General Assembly and the General Synod, respectively. The plan proposes that the two bodies unite on the doctrinal basis of the Heidelberg Catechism and the Presbyterian Confession as revised in 1903, and on the ecclesiastical basis of the constitutions and disciplines of the two churches, the name of the united church to be hereafter selected, with the understanding that "Reformed" and "Presbyterian" shall be regarded as equivalents.

Litigation in Reunion with the Cumberland Church.—The reunion of the Presbyterian and Cumberland Presbyterian bodies has been only partially successful. The organization of the Cumberland Church continues to be maintained, with a General Assembly, and with synods and presbyteries. Litigation for the control of church property has been going on with these results: the Supreme Courts of the States of Georgia, Kentucky, Texas, California, Indiana, Illinois, Arkansas and Alabama have decided appeals in favor of those adhering to the reunited Church; in Tennessee and Missouri the decisions have been in favor of the Cumberland body.

The Southern Presbyterian Church.—The Southern Presbyterian Church, as it is popularly called, the Presbyterian Church in the United States, as it is officially designated, has celebrated this year the semi-centennial of its history. War questions divided the Old and New School branches in 1861, and the Southern Church was formed in that year by the union of these branches in the South. It began its career with about 1,000 churches and 75,000 communicants; at the end of its 50 years it has more than 3,300 churches, and 282,000 communicants.

Amending the Confession.—For several years the question of amending the article in the Westminster Confession of Faith, which seems to imply that there are non-elect infants, has been before the Church. The General Assembly of 1910 sent down an amendment which the presbyteries did not approve. Last year it sent down another amendment proposing that the word "elect" coming immediately before "infants" be eliminated, so that the clause will read "Infants dying in infancy are regenerated and saved by Christ," etc. Most other Presbyterian branches, including those in Scot-

land and England, long ago adopted declarations indicating the sense in which the Westminster Confession is received. *Ad interim* committees were appointed to prepare a pastoral address on worldliness; to consider and report on the establishment of a great Presbyterian university near Atlanta, Ga., and concerning the education of children. The presbyteries are asked to approve a plan for a judicial tribunal to deal with all judicial cases, except those involving doctrine. The object is to relieve the Assembly of the tedium of such cases.

THE REFORMED CHURCH IN AMERICA

The Heidelberg Catechism. — The Synod, the chief court of the denomination, had before it at its annual session in June, 1911, an important constitutional question. It was a smaller body than usual, due to the fact that the ratio of representation had been increased, reducing by about 90 the number of delegates. Ministers, churches and classes are required by the constitution to see that the Heidelberg Catechism, one of the denomination's standards of faith, is explained from the pulpit on Sundays, so that the whole catechism will be reviewed every four years. The duty having been neglected somewhat, the question arose whether the constitutional provisions ought not to be modified. A committee had gathered information showing that in 317 churches the requirement is observed, and in 229 churches it is not. In the opinion of the committee, a change for the better is taking place, the number of churches obeying the rule increasing at a larger rate than those neglecting it. It did not believe the progressive element of the Church "would be willing to cast away this glorious heritage," therefore, it recommended that no change be made in the matter. This was adopted by the Synod, the vote being 92 to 65. The Synod appointed professors to fill vacancies in its theological seminaries.

Union with the Presbyterian Church. —The question of organic union with the Presbyterian Church was not favorably considered. Negotiations between the two Churches with this object in view have hitherto come to naught, and the Synod seemed to think that real practical coöperation, for which there is abundant opportunity, meets all present necessity for closer relations.

THE NEW YORK EPISCOPAL CATHEDRAL

For many years work has been proceeding upon a cathedral for the Protestant Episcopal Church in the diocese of New York. In April, 1911, two chapels, those of St. Savior and St. Columba, were consecrated, 20 bishops, 400 clergymen, including ministers of other denominations, and 1,500 laymen were present. Subscriptions amounting to $320,000 were received toward the portion yet to be constructed. The Cathedral of St. John the Divine will rank, it is believed, as the fifth greatest in the world.

INTERDENOMINATIONAL MOVEMENTS

Proposed World Conference on Christian Unity.—This movement, launched under the auspices of the Protestant Episcopal General Convention of 1910, aims to secure a conference of all "Christian communions throughout the world which confess our Lord Jesus Christ as God and Savior," to consider questions of faith and order. The Episcopal Commission has been in correspondence with various Christian bodies and a preliminary conference was held in New York City in March, 1911, in which representatives of the Protestant Episcopal, Presbyterian, and Congregational Churches, and of the Disciples of Christ, participated. The conference was informal. The Western Section of the Presbyterian Alliance has cordially approved of the proposed conference. So also has the Presbyterian General Assembly, and it has appointed its Committee of Church Cooperation and Union to represent it.

Proposed Union of Methodists, Presbyterians and Congregationalists in Canada.—This movement, which was described in these pages last year, has made considerable progress since. The Presbyterian General Assembly in June, 1911, received reports showing that a majority of the presbyteries had voted in favor of the plan, and decided to submit it to the sessions and congregations in the form of three questions: "(1) Are you in favor of organic union with the Methodist and Congregational Churches? (2) Do you approve of the proposed basis of union? (3) Have you any suggestions or alternatives to offer?" Action is to be taken in every case by ballot. The minority vote in the presbyteries was much larger than was expected, and the Toronto presbytery refused to indorse the basis by a vote of 35 to 32. The voting of the Methodist conferences has been heavily in favor of the union, approximating 85 per cent.

Church Federation in India.—The process of union in India between denominations of like faith and history was described in these pages last year. For example, there is now a Presbyterian Church of India composed of various Presbyterian bodies of the United States, England and Scotland working in that empire; and the South India United Church, including Presbyterian and Congregational churches. In Aug., 1911, a further step was taken in the forming of a Church Federation, intended to embrace all evangelical bodies in India. Each Church entering the Federation is to welcome members of other Churches to its fellowship, and each Church is to be free to adopt such forms concerning ordinances, etc., as it may deem best. Presbyterians, Friends, Congregationalists, Disciples of Christ, Baptists, Wesleyans and other bodies have joined the Federation, and it is hoped that American Methodists, Lutherans and others will eventually come in.

The Men and Religion Movement.—This is the newest development among the men of the churches. Both ministers and laymen are included in it. Its aim is to get men more interested in the Church and the Church more interested in men and boys and social conditions. It is interdenominational, and has no creed to impose. It has several departments which are closely related: Bible study, evangelism, social service, missions, and the care of boys. The movement is to be established by the organization of committees in 1,600 cities of the United States and Canada. It is to be both formative and reformative—it will seek to prevent boys from becoming prodigals, and it will seek to reform prodigals; it will study social conditions, with a view to bringing about better conditions of living, housing, feeding, recreation; it will endeavor to secure better sanitation in houses, cleaner streets, better civil officers, fewer liquor saloons, gambling places and disorderly houses. Information is to be gathered in every community and systematically classified, and experts are to teach workers how to proceed. Better methods of Bible study are to be given, so that more men and boys will attend Sunday School, and the scientific way of reaching those not church-goers is to be shown.

International Sunday School Convention.—This is an interdenominational movement in which the Sunday Schools of all evangelical denominations in North America are interested. It meets triennially. Three years ago it was held in Rome, Italy; in June, 1911, it met in San Francisco, Cal. It appoints an International Executive Committee, which in turn chooses the committee which prepares the international Sunday school lessons. It represents in a general way the Sunday school interests of the United States, Canada, Mexico and Cuba. Immense buildings are necessary to accommodate the conventions. The last one had an attendance of 7,000 or 8,000 persons, including a chorus of 1,000. The triennial survey indicated substantial progress in the last three years. There had been an increase of 76,172 officers and teachers in the Sunday Schools, of 60 per cent. in the cradle roll, a department for very young children, and there are 30,000 classes of adults with an enrollment of nearly a million members. The program of the convention

included general addresses, departmental conferences, a street parade, and a collection amounting to $126,000 for the support of association work. The uniform system of Sunday Schools lessons has been in operation for a generation. It is uniform and it is graded, according to the needs of primary, intermediate and other departments. The evangelical denominations use the lessons in their prepared order for every Sunday in the year, so that in all schools of different denominations, in all parts of the world, the same lesson is taught on any given Sunday. The publications are numerous. Most denominations issue their own *Lesson Helps*, of which 500,000,000, it is estimated, are published annually.

World's Student Christian Federation.—This is an international and interdenominational movement for the benefit of students in Christian universities and colleges. The ninth conference was held in Constantinople, Turkey, in Robert College. Methods of developing the Christian life among students were considered, and particularly of training leaders for service in the church and mission field.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION

The Young Men's Christian Association aims, in all its multiform activities, to unite young men in the service of their fellows, ministering to their religious, intellectual, physical, and social needs. The first Associations in North America were organized in Montreal and Boston in 1851. There are (1911) in the United States and Canada, 2,118 Associations, having an aggregate membership of at least 540,000 men and boys.

Its Various Activities.—The Association adapts its methods to the needs of various classes. At first its work was with the commercial classes in the cities and large towns, and then it expanded until there is hardly a large class of young men untouched by its influence. In its buildings and from them as centers various activities are carried on, including Bible classes and other religious services, educational classes in a wide variety of subjects, physical training in connection with the gymnasium and promotion of outdoor sports. In the country districts there are Associations whose aim is to coöperate with the home, the Church and the school in work for the reconstruction of the social and religious life of rural communities. This work is organized in 53 counties, in 27 states and provinces. Associations especially for railroad men are organized at 240 division points, having 86,000 members. These Associations own and occupy 120 buildings and in addition the railroad companies have set aside for their use 52 other buildings. The Student Associations are organized in all kinds of institutions of learning; in the larger there are secretaries giving their whole time to the Association. The promotion of Bible study, the study of social problems and the enlisting of students in community service are among the principal activities. The Student Volunteer Movement for Foreign Missions, whose aim is to stimulate missionary study among students and to recruit students for missionary service, is a closely allied organization. At 75 army posts and ten naval stations there are Associations; over 7,000 enlisted men visit these buildings daily. Work is carried on also at the camps for the State Militia. Another field is found in mining, construction and lumber camps, and manufactories. Association secretaries are stationed at the principal ports in Europe and at the gateways to America and Canada to minister to the needs of immigrants. Over 13,000 immigrants are in classes in English conducted by Associations. The colored men have Associations of their own. Buildings costing $100,000 each have recently been erected by them and their friends in Chicago, Indianapolis, Toronto, and Los Angeles. Special work is also carried on for Indians.

Work in Foreign Countries.—The Associations in North America have projected their work to foreign countries. At the call of the mis-

sionaries, Associations are now established in Japan, Korea, China, Hongkong, the Philippine Islands, Ceylon, India, the Turkish Empire, Argentina, Uruguay, Chile, Brazil, Mexico, and the West Indies, and 117 secretaries are now in the field. Through the generosity of friends in North America, a fund has been raised providing for over 50 new buildings to be erected in the next three years. Other work is being carried on in the Canal Zone for the men who are constructing the Panama Canal.

Schools for the training of secretaries are located in Chicago and in Springfield, Mass., and summer training schools are provided at Silver Bay on Lake George, at Lake Geneva, Wis.; Estes Park, Colo., and Lake Couchiching, Canada. Over 1,000 students attended these training conferences last year. The individual Association is the unit, and each Association is entitled to membership in the Triennial International Convention. The various states and provinces have committees for supervising Associations in their territory and the Triennial Convention elects the International Committee of Young Men's Christian Associations, which has general supervision over the entire work in North America. The general headquarters of the movement is 124 East 28th Street, New York.

MOHAMMEDANISM

Christian Missions and Islam.—It is not denied that missionary work among the Moslem peoples presents peculiarly difficult phases. In Turkey proper the missionaries have not been free to seek converts among the followers of the Prophet, and it has not been safe for Moslems to abjure their faith. In former years those who did so were apt suddenly to disappear. In India and Egypt much effort has been put forth with results not altogether encouraging; while in Africa little has been attempted. The peculiar problems confronting those engaged in this work has led to the holding of general conferences for discussion and comparison of experiences. The second general conference was held in Lucknow, India, in Jan., 1911, and was attended by 300 missionaries and workers representing 54 missionary societies. The increase of Islam, particularly in India and Africa among heathen peoples, indicates that it has a very active and successful propaganda, and its ability to adjust itself to modern thought, its amazing production of periodical literature, and its general intellectual activity proclaim a new Islamic movement of no little force. The conference considered the best methods of missionary approach and convinced itself that the churches at home must greatly increase their agencies among the Moslems.

One of the secretaries of the American Board of Commissioners for Foreign Missions, who has been traveling in Mohammedan lands and making a careful study of present conditions, is much impressed with the grip which this faith has upon its followers. It is the most tenacious form of religion, and is deeply entrenched in the life of the people. In Brousa, the ancient Turkish capital, he counted sixty mosques from one window, and there are 100,000 Mohammedans in a city of 125,000 population, and the type of religion represented is the most conservative and reactionary. The only influence that seems effective in opposing Islam is education. Before education it disintegrates. The newspaper has come in and the modern Turk reads it, and he sends his children to the missionary school. The policy of the Young Turks, who are politically in the ascendant in Turkey, seems to be "to make the empire Mohammedan, to find the much-needed unity in the Turkish religion," which is divided into fiercely warring sects.

Bahaism and Christian Brotherhoods.—Among the attempts made to bring about a greater unity in Islam, must be mentioned the movement called Bahaism. It began with one Ali Mohammed, in Shiraz, Persia, in 1840. He was the "Bab," door, the forerunner of One to come. Succeeding him, after his martyrdom, came Baha Ullah, who taught many disciples, and gave direction to the

movement. Bahaists hold to love, tolerance and charity, and that all nations are to become one in faith, all men brothers, ending difference of race and diversity of religion. This body, which has 70 societies and about 20,000 members in the United States, stands in Persia for a union of such diverse bodies as Christians, Jews, Mohammedans. It has no hierarchy, no ritual, no creed, and seeks no converts from any faith. One can be a Baha and not cease to be a Jew, Christian or Mohammedan. Abdul Baha, the present leader in Persia, visited London in 1911, and gave his message of unity from the East to a brotherhood movement in England, whose purposes are expressed in six statements as follows: "1. To lead men and women into the Kingdom of God; 2. to unite men in brotherhoods of mutual help; 3. to win the masses of the people for Jesus Christ; 4. to encourage the study of social science; 5. to enforce the obligations of Christian citizenship; 6. to preach the unity of social service." It is estimated that there are 600,000 members of this brotherhood in England.

BUDDHISM

The Dalai Lama's Policy.—It has fallen to an American newspaper man to interview this august head of Buddhism, who is entitled to divine honors, in the belief of many of his followers. He has been in exile from Lassa, his headquarters, since an English expedition, under Younghusband, entered Tibet. The Lama is described as a young man of good character, though the Chinese charged him with immorality in their efforts to dethrone him, cleanly in habit, but not intellectual in appearance. He praised America to his interviewer and said on his return to Lassa he expects to send his young men to the United States to acquire a Western education. The Lama believes that at some time in the future the different religious cults of the world will have become one, and that one, of course, will be Buddhism or a modification of Buddhism.

EUGENICS AND CHRISTIANITY

The broadening of Christianity to include in its scope of thought and work things that belong to the body, as well as to the mind, soul and spirit, has given rise to a discussion as to whether eugenics is within or without the province of Christianity. The English Society of Eugenists defines the system as "the study of agencies, under social control, that may improve the racial qualities of future generations, either physically or mentally." A Roman Catholic writer insists that any proposal for the improvement of the race is unscientific which does not take into consideration the higher and other life for which revelation and grace are a preparation. The theory that man's betterment is essentially a matter only of diet, fresh air, art, etc., is opposed as only a partial system of eugenics.

CHURCH-GOING IN GERMANY

The church-going habit in Germany is said to be seriously declining. The masses are indifferent to or estranged from the Churches, both Protestant and Catholic, but more particularly the Protestant. In both city and country village this neglect of the Church and Church ordinances is observable, and serious-minded Christians do not hesitate to say that for millions of Germans the Church has become "an antiquated and obsolete institution," and that if church services ceased entirely there are hundreds of thousands of baptized persons who would not miss them. And yet, the German people are not, as a whole, disinclined to religion. The reasons suggested for the present tendency away from the Church include the strain of the long hours of work which the average German laborer has to endure, with no Saturday half-holiday, and the use of Sunday for outdoor and social recreations; long, wearisome, unattractive sermons; elaborate ritual and music; the growth of the extreme socialist and agnostic movements, and of the theosophist and other modern societies. Those

who deplore the lack of interest in the State Church particularly are not without hope that the more direct and modern methods characteristic of American churches may bring about a change in the habit of church-going in Germany.

HAECKEL'S WITHDRAWAL FROM THE CHURCH

Prof. Ernst Haeckel, the distinguished German scientist, declares his withdrawal from the Evangelical Church. He explains that in his young manhood he reached, through much conflict, the conclusion that the faith of Christianity was irreconcilable with the results of scientific inquiry. For the next 40 years he held that evolution made it impossible to believe the Scriptural account of creation. He did not, however, openly withdraw from the Church out of regard for his family and friends. Now, with this reason removed, and with a ripe conviction, he deems it repugnant to his sense of honor to continue even the external appearance of religious inconsistency. He views with regret the present reaction, both in the Protestant and Catholic Churches, under the active influence of Emperor William, and looks forward to the separation of Church and State and the freeing of the school system as most desirable. He speaks with indignation of the "honorless slanders" on his moral character circulated by the clerical and reactionary press, all because he has defended the true modern teachings of evolution and its most important conclusion—that man has descended from the vertebrate animals.

CHRISTIAN SCIENCE

EUGENE R. COX.

Foundation.—Christian Science was named and founded by Mary Baker Eddy. In 1866, after a remarkable recovery from a supposed fatal accident, she announced the discovery of a spiritual law of healing. Following her discovery, she remained in seclusion for three years, devoting this entire time to the study of the Bible, believing that in its pages she would find revealed the rule of spiritual healing. The results of her inquiry are to be found in *Science and Health with Key to the Scriptures*, the text-book of Christian Science. Throughout the remainder of her life, from Feb., 1866, until Dec. 3, 1910, Mrs. Eddy labored for the single purpose of establishing Christian Science as a world religion.

Church Organization.—The material organization of the church is simple and elastic. All that may be termed the ecclesiastical law of the denomination is contained in *The Manual of the Mother Church, The First Church of Christ, Scientist, in Boston, Massachusetts*, a small volume of but 138 pages, including index and appendix. The *Manual* contains by-laws passed at various times as conditions and occasions required, and so practically embodies the solution of every question that arises in the organization. By it the regulation of the Mother Church is vested in a board of five directors, and all other churches of the denomination are branches of this church, but have no authority exercised over their organization or affairs except as provided in the *Manual*. The organization of each branch church is essentially democratic. All Christian Scientists may be members of both the Mother Church and of one branch church or society. The requirements for organizing a branch church are that there shall be not less than sixteen charter members, at least four of whom shall be members of the Mother Church.

Number of Churches and Practitioners.—*The Christian Science Journal* contains a directory of all the branches of the Mother Church, and the issue of Oct., 1911, shows five churches in Africa, six in Australia, one each in the Philippine Islands and China; in Europe, churches in France, Germany, Great Britain and Ireland, Scotland, Wales, Holland, Italy, Norway, Sweden and Switzerland; in America, in the Bahama and Bermuda Islands, Canada, Mexico, Panama, Porto Rico, Argentina, and

the United States, constituting a total of 1,298 churches and societies. The same copy of the *Journal* contains the cards of 4,996 practitioners, there being one or more in all of the churches above referred to. While all members of the denomination and all believers in its doctrines are expected to put into practice what they have learned from the text-book, yet only those who are prepared to devote their whole time to metaphysical healing may have their cards in the *Journal*, and before these cards are inserted the applicant must be indorsed by at least three members of the Mother Church as being morally and spiritually qualified, and submit written evidence of at least three cases of healing as the result of his practical knowledge of metaphysics.

Membership.—One of the by-laws says: "According to Scripture, they shall turn away from personality and numbering the people"; hence the membership of neither the Mother Church nor the branch churches can be given. The report of the clerk of the Mother Church for 1910, however, showed the organization of a branch church at the rate of one every three and a half days, while the increase of practitioners having cards in the *Journal* from June, 1910, to June, 1911, was 398.

Services.—The sermons in the Christian Science churches are identical throughout the world. *The Christian Science Quarterly* contains a Bible lesson for each Sunday of the term for which it is published, composed of a Golden Text, a selection which is read responsively, and Bible texts and correlative passages from *Science and Health*, which comprise the sermon. The services are conducted by two readers, who read alternately from the Bible and the text-book.

Publications.—In order to meet the need for authoritative answers to questions as to what Christian Science really is, what its aims and accomplishments are, and to prevent misinformation becoming current, there are three established lines of activity connected with the Mother Church. The first is the Christian Science Publishing Society, which publishes *The Christian Science Journal*, a monthly magazine. This is the official organ of The First Church of Christ, Scientist, in Boston, Mass. It was founded in April, 1883, by Mrs. Eddy, and is issued on the first of each month. *Der Herold der Christian Science*, a similar, though smaller, monthly, is published in German; *The Christian Science Sentinel*, issued every Saturday, contains brief mention of important events, contributed articles on Christian Science, selected articles, editorials, news of the churches, accounts of lectures and testimonies of healing. The Society also publishes *The Christian Science Monitor*, a daily newspaper, which is generally regarded in the newspaper world as a prominent exponent of clean journalism. For some time it was the only newspaper in New England having the news service of both the Associated Press and the United Press. It cannot be regarded as sectarian, as it devotes less than a column of each issue to an article touching the practice of Christian Science. Its fund of world news is well selected, extensive and often exclusive. It has a world-wide circulation, and is found in clubs in China, Manila and many oriental cities. It is said to be the only newspaper allowed to be read by the inmates of the Australian prisons. The predominant characteristic of all Christian Science publications is constructive and not destructive.

Board of Lectureship.—Further to meet the public desire for enlightenment regarding Christian Science, there is a Board of Lectureship, consisting of twelve lecturers appointed by the Directors of the Mother Church. Each church is required to give at least one lecture a year, which is always public and always free.

Because of the public attention given to Christian Science, news concerning it has been regarded by newspapers as sensational, and unimportant items have in the past been featured on this account. This stage seems rapidly passing away, and it is recognized as an established religion. Because, however, of the many misrepresentations, misstate-

ments and criticisms which from time to time appear in the public press and in books and pamphlets, there is established in each state a committee of one, known as the Christian Science Committee on Publication, whose duty it is to correct, in a Christian manner, impositions on the public in regard to Christian Science, or injustices done members of the church by the daily press, periodicals or circulated literature.

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Unity of Good.—Elucidating practical Christian Science.

Rudimental Divine Science.—A concise statement of Christian Science in the form of questions and answers.

No and Yes.—A brief statement of the important points in Christian Science.

Christian Science versus Pantheism.—A refutation of the charge that Christian Scientists are pantheists.

Poems.—A compilation of hymns.

JUDAISM

A. S. Isaacs

The Passport Question.—A movement was begun early in the year by a number of leading Jewish organizations to induce President Taft and Congress to take steps toward abrogating the treaty of 1832 between Russia and the United States, unless Russia accepts American passports granted to American citizens of the Jewish faith. Resolutions were promptly introduced into both houses of Congress, with the general concurrence of all parties and sections. In many of the state legislatures similar resolutions were adopted. The press in general favored the attitude taken. It is a significant proof of the popular interest created that protests against Russian intolerance were made by numerous religious bodies in conference assembled, among others Baptists, Methodists, Lutherans, Congregationalists, Episcopalians, Latter Day Saints, and Friends, and by fraternal organizations, including the Odd Fellows and Masons.

During the summer the *Evening Mail* of New York City printed a series of articles dealing with the passport evil in Russia. Such was their effect that in October a strong committee of non-Jewish public men was organized, to voice the general indignation. Under its auspices meetings were held throughout the country. Gov. Dix, Mayor Gaynor, Speaker Champ Clark and William Jennings Bryan headed the committee, which included a long list of U. S. senators, governors, congressmen, mayors. On Oct. 30 the clerical conference of the N. Y. Federation of Churches held a mass meeting of protest, in which Protestants, Catholics and Jews were represented. On Oct. 22, at a public conference in Philadelphia, Senator Penrose promised to take up the matter on his return to the Senate, "to remove the reproach to American traditions which has marked Russia's discrimination" against the Jews. The agitation resulted in December in the abrogation by President Taft of the Russian treaty of 1832, details of which are given in other parts of the Year Book (see IV, *American History*, and V, *International Relations.*)

Jews in Agriculture.—Under the auspices of the founders of the Jewish Farm School at Doylestown, Pa., the first steps of a movement were taken to settle a number of families in Utah on a favorable soil, 8,000 acres of land having been selected for that purpose. According to the *Report of the Jewish Agricultural Society* for 1911, Jews now occupy 2,984 farms, with over 30,000 persons engaged in agriculture throughout the country. The two schools—that at Woodbine, N. J., under auspices of the Baron de Hirsch Fund, and Dr. Krauskopf's at Doylestown, Pa., graduate annually capable agri-

culturists, etc. Jewish farmers have formed for two years a federation of their own, numbering 860 members and 36 societies, scattered in all parts of the country. Free scholarships for sons and daughters of Jewish farmers continue to be granted by the Jewish Agricultural Society in various state agricultural colleges for their short winter courses.

On Oct 9 a "Hebrew Farmers' Colonization Society" was organized in Chicago, which intends to take 450 Jewish families from that city to Wyoming in its famous Wheatland district. Each family will be advanced $1,000 in cash by a number of men, at whose head is Julius Rosenwald. Each family is to settle on 160 acres of land, making a total of 72,000 acres eventually to be occupied. The farmers will be given 10 or 15 years to pay back the money advanced, but without interest.

Private Frank Bloom.—A sharp reprimand was administered by President Taft to Col. Garrard, commandant at Fort Myer, Va., in the spring, for his comments on the application of Private Frank Bloom to be admitted to examination as officer. The colonel did not favor the applicant on the ground that as a Jew and the son of a tailor at the army post, he did not possess the social standing to justify his admission into the officers' circle. The President criticised Col. Garrard severely and ordered Bloom to appear in due course for examination as Second Lieutenant, which he successfully withstood in September. Almost simultaneously with his action in this incident, the President, in an address delivered in a Washington synagogue, arraigned the clubs which blackball cultured and prominent Americans of the Jewish faith. (See also IV, *The President in 1911.*)

Elections and Appointments to Public Office.—Among the newly elected senators in the various states were: A. Abraham and B. Selling, of Oregon; J. A. Asher, of Nevada; J. A. Ettelson, of Illinois; J. Fisher, of West Virginia; H. W. Pollock, of New York; H. Rosenhaupt, of Washington; S. W. Sohns and C. Wolf, of Pennsylvania; E. Trautman, of Indiana, and E. I. Wolfe, of California. Edward Lazansky was elected Secretary of State for New York, and Isidor Rayner was reëlected to the U. S. Senate. Judge Julian W. Mack was appointed judge of the new federal Court of Commerce. Maurice Simmons, of New York, was elected Commander-in-Chief of the United Spanish War Veterans at the eighth annual encampment held at Oklahoma City in August. Samuel Kalisch, of Newark, N. J., was appointed a justice of the New Jersey Supreme Court.

Jewish Colonization.—The *Annual Report* of the Jewish Colonization Society (Baron de Hirsch's foundation) shows its remarkable activity during the past year. It maintains two settlements in Canada, covering an area of 95,259 acres and a population of 3,020. Tobacco growing is one of the industries. In the United States, 30,000 persons occupy the settlements it has organized. It has extended its operation to Anatolia, in addition to fostering work in Palestine. In Brazil it maintains a small colony. In Russia, Roumania, and lands where there is constant oppression, its work is largely educational and charitable. In Russia 50 elementary schools, with 8,471 pupils, have been assisted, besides 18 schools in Odessa alone, and 30 in Roumania. In Galicia it supports 23 loan societies and an agricultural school with fifty pupils.

Emigration.—The question of emigration receives careful study. In Russia the Society maintains 499 bureaus of information, combined under 19 district committees. From the St. Petersburg head office a bimonthly periodical gives information to intending emigrants. Classes in English have been established, and manuals and dictionaries in English and Spanish distributed. Out of the 80,000 Jews who left Russia in 1910, 46,000 consulted the organization.

Zionism.—The tenth Zionist Congress at Basle in August was attended by about 400 delegates, including a few from America. Its results were the removal of the bureau from Cologne to Berlin, and the appointment of a commission, instead of a president, to administer the affairs

of the organization. Its published manifesto indicates that while it will not wholly abandon political aspirations, it will extend its present activities in Palestine, propagate cultural work, foster further Hebrew study, and devote special attention to present financial agencies, such as the Bank, National Fund, various colonization schemes, and other institutions.

Palestine.—In the course of the past twenty years, much activity has prevailed in Palestine, largely due to the Zionist movement. A bank has been founded in Jaffa, farms and olive and orange plantations cultivated, and an agricultural experimental station established at Haifa, where a Hebrew technical school is being built, as well as a national library, a museum and a bacteriological and hygienical research bureau. Recent Consular Reports are not so reassuring as to the general progress in Palestine. The commerce of Jaffa shows a decline for the year, and the agricultural outlook is less satisfactory. The manufacture of soap was the only factor that made advance.

New Synagogues and Institutions.—During the communal year, Sept., 1910, to Sept., 1911, new synagogues have been erected in the following cities:

New Jersey.—Jersey City, Newark, Passaic, Somerville.
New York.—New York, Far Rockaway, Rochester, Buffalo, Troy.
Ohio.—Columbus, Zanesville, Bellaire.
Pennsylvania.—Philadelphia, Pittsburg, Butler.
Connecticut.—New Britain, Bridgeport.
Massachusetts.—Springfield, Boston.
Illinois.—Chicago, Joliet, Lincoln.
Rhode Island.—Providence.
Florida.—Jacksonville.
Wisconsin.—Marietta.
Missouri.—St. Joseph.
Nebraska.—Omaha.
Colorado.—Denver.
Arizona.—Tucson.
Texas.—Houston, Waco.
California.—San Francisco.

New schools, orphan homes and hospitals, have been erected in numerous cities in all sections. Special efforts are being made to educate along helpful lines the children of recently arrived immigrants and to train their young men and women in useful occupations. The Order of B'nai B'rith, which is organizing an orphan asylum in Pennsylvania, has resolved to build a hospital at Hot Springs, Ark., in memory of Leo N. Levi, its former president. It will be the first hospital of its kind for rheumatism and blood diseases.

Communal Progress.—The efforts made by the American Jewish Committee to organize regular communities in the various larger cities appear to succeed, and tend particularly to range the recently arrived emigrants under effective control. As a result, better facilities for worship and education follow, particularly in the latter field. In New York City, with its vast Jewish population, numbering in all the Boroughs fully a million, probably a million and a quarter, the new "community," or "Kehillah," is striving to develop the school system with special reference to more thorough study of Hebrew, Dr. Benderley being in charge. A large amount has been subscribed to promote the new movement, which aims at an educational revival. In Philadelphia, Baltimore, Chicago, St. Louis, similar energy is being displayed in the organization. The New York Kehillah has established a Board of Rabbis to adjudicate on religious and ritualistic questions, and an effort has been made to regulate the granting of divorces without regard to the law of the land. The Jewish Chautauqua held for the first time a Western Assembly in San Francisco. At a meeting of Grand Lodge No. 4 of the B'nai B'rith Order (March 2), a resolution was adopted excluding from membership Jews who join Christian Science churches. President Taft addressed a meeting at the Washington Temple, May 16, for the purpose of planning a memorial monument to Haym Salomon, a financier of the Revolution.

Sunday-Closing Laws.—Attempts to regulate more strictly Sunday-closing laws have aroused opposition, and in some states Jews who keep their stores closed on Saturdays are allowed to keep open on Sunday. Cases to test the constitutionality

of the law have followed. As a rule, the action is individual; the Jews as a class are not inclined to disturb existing conditions, and in some cases doubtless suffer an economic loss by the observance of their Sabbath day.

Great Britain.—The anti-Jewish riots in Wales contemporary with the miners' strike were an unpleasant evidence of the persistence of antipathy, however promptly suppressed. The new British Parliament contained a large number of Jewish members. Sir Rufus Isaacs was appointed Attorney General.

Russia.—In Russia, the assassination of M. Stolypin by a baptized Jew gave rise to no fresh pogroms at Kiev, where 30,000 Cossacks were ordered to maintain order. Few riots, if any, have occurred during the year, despite constant expulsions and exactions, against which some chambers of commerce are protesting. The policy of restricting both the commercial and educational development of the Jew is actively continued.

Germany.—In Germany the anti-Semitic movement is less active. In the upper house of the Parliament of Alsace-Lorraine, a representative of the Jewish community is provided for. Prominent industrial leaders, like Albert Ballin, James Simon and Emil Rathenan, have been honored by the Kaiser. The attempt to abolish the Jewish method of slaughtering animals was foiled by a declaration by the president of the German Society for the Prevention of Cruelty to Animals as to its innocuousness.

Holland.—About the time when the murder of the Russian Premier Stolypin was expected to arouse fresh persecution of the Jews, which happily did not occur, owing to the government's prompt action, the Dutch Minister of Commerce was opening, on Sept. 18, the new Diamond Exchange in Amsterdam. With but few exceptions, the entire body of diamond merchants, 1,300 in all, are Jews. The Exchange is to be closed on Saturdays and Jewish festivals. This incident illustrates the position of the Jews in Holland and their share in developing trade and commerce.

Other Countries.—In France, Prof. Lippman has been elected vice-president of the French Academy of Scientists, and Gen. Valabrègue appointed Commander of the Third Army Corps. In Italy Mayor Ernesto Nathan's address at Rome on the fortieth anniversary of the Kingdom gave rise to protests from the Pope and Catholic organizations throughout the world. Roumania continues the policy of restriction, forcing the Jews out of the country. In Austria, the death of Mayor Lueger of Vienna preceded the decline of the anti-Semitic movement which he championed for some years. The new regime in Turkey is distinctly favorable to the Jews, although unfriendly to any new Jewish state in Palestine. Many are now government officials. The Jews promptly instituted criminal proceedings against the Damascus newspaper which raised the cry of "blood accusation." More attention is being paid to technical education in Palestine, which is hopeful, although the great poverty that prevails is a depressing feature. In Australia, the Government announced (June 30) if Jews, Seventh Day Adventists, or adherents of other religions, object to military training on Saturdays, special arrangements will be made to enable them to train on other afternoons or nights of the week.

Rabbis in Conference.—At the 22d Annual Convention of the Central Conference of American Rabbis, the oldest and largest representative gathering of its kind in America, held at St. Paul, Minn., June 30—July 6, apart from special papers on the centenaries of several Jewish scholars, the following papers were presented: "The Basis of Membership in the American Synagogue," "The Problem of Ethical Instruction in the Public School," "The Harvest Service," "Religious School Work for High School Pupils," and "Jewish Apologetics." The conference's prayer-book is now in use in 283 congregations, and has been sold in seventeen years to the number of 115,876 copies. During the year special efforts were made to eliminate from the boards of American theatres the so-called stage Jew.

XXXIV. ART, ARCHÆOLOGY, MUSIC, AND DRAMA

PAINTING, SCULPTURE, AND HANDICRAFTS

FLORENCE N. LEVY

The following gives a brief summary of the year's activities among the organizations devoted chiefly to the graphic and plastic arts.

American Federation of Arts.—The American Federation of Arts held its second annual convention in Washington, D. C., May 16-18, and reported 120 chapters (affiliated societies), as against 80 in 1910. During the season of 1910-11, it circulated nine exhibitions, which were shown in 34 cities.

Museums.—The American Association of Museums met in Boston May 23-25. The opening session was held at the Museum of Fine Arts. The papers read discussed chiefly the details of museum management. The Association, however, numbers few art museums, the majority of members being scientific museums.

The only art museum building dedicated during the year was the Sweat Memorial Museum at Portland, Me. New art museum buildings now in course of construction include those at Toledo, New Orleans, and Los Angeles. In Detroit, two blocks of land in the heart of the city were purchased for the erection of a new art museum. In Minneapolis, a fund of over $500,000 for the erection of an art museum was secured through a whirlwind campaign.

The Metropolitan Museum of Art in New York is constructing the north wing on the Fifth Avenue side. The total accessions during the year numbered 10,521, of which 59 were paintings and 41 sculptures.

The Boston Museum of Fine Arts received as a gift from Mrs. Robert Dawson Evans the building which is to contain the series of picture galleries.

The Art Institute of Chicago made important additions to its building, including the construction and opening of the central staircase and the addition of a new office building. Among the most important accessions were the gifts from Edward B. Butler of eighteen paintings by George Inness, and from the Friends of American Art of eighteen oil paintings by various contemporary American artists.

Painting.—The principal exhibitions of the year were those held at the National Academy of Design, Dec. 10, 1910, to Jan. 8, 1911, and Mar. 11 to Apr. 16, 1911; and Carnegie Institute, Pittsburg, the only international exhibition, Apr. 27 to June 30, 1911. The Pennsylvania Academy of the Fine Arts, the Corcoran Gallery at Washington, the Art Institute of Chicago, the Buffalo Academy of Fine Arts, the City Museum of St. Louis, the Cincinnati Museum and others had the usual series of exhibitions.

Sculpture.—The National Sculpture Society sent out a traveling exhibition of small bronzes, and prepared a group of large photographs of important sculpture in the United States, which were circulated as one of the exhibitions of the American Federation of Arts. One of the principal pieces of sculpture of the year was the Pioneer Monument by Frederick MacMonnies, unveiled at Denver, Colo., June 24.

Illustrations.—The Society of American Illustrators prepared an exhibition of original drawings which were circulated under the auspices of the American Federation of Arts.

Municipal Art.—The first City Planning Exhibition ever given in this country under municipal aus-

pices was held in the City Hall of Philadelphia during May, in connection with the Third National Conference on City Planning. The American Civic Association held its annual convention in Washington, D. C., in Dec., 1910. About 500 villages, towns and cities are represented in the organization. The Municipal Art societies of New York, Chicago and Baltimore have aided in placing mural decorations, and taken active steps toward increasing the interest in the "city beautiful."

Handicrafts.—The National League of Handicraft Societies held its third annual convention in Boston, May 19 and 20. Thirty-eight societies are affiliated. The Boston Society of Arts and Crafts held an important exhibition at the Museum of Fine Arts, May 17 to June 11. The National Society of Craftsmen in New York held its annual exhibition in December.

Education.—The general trend among professional art schools is toward industrial art. In Detroit a movement started by the Detroit Society of Arts and Crafts led to the establishment of a School of Applied Design which was opened in the Autumn. The European scholarships in painting, sculpture and architecture established by the American Academy in Rome tend to raise the standard of instruction in academic work in order that students may meet the requirements. In colleges and institutions of higher learning, an effort is being made to develop courses in the history of art on the same basis as literature, not only to broaden and deepen understanding, but as a necessary part of the history of human achievements. The Eastern Art and Manual Training Association, the Western Drawing Teachers' Association, and similar state and local societies are helping to raise the standards of taste throughout the country. Local School Art Societies, whose membership consists chiefly of laymen, are coöperating with the teachers. The School Art League of New York has established several industrial art scholarships for graduates of the high schools, and the first awards were made in the Spring of 1911.

Sales.—Twenty-seven auction sales of paintings were held in New York during the season of 1910-11 when 3,399 pictures were disposed of for a total of $1,062,943.35.

Necrology.—Obituaries of the year number over thirty painters, sculptors and illustrators, among the most important being Edwin A. Abbey, Frederic P. Vinton, Henry Hammond Gallison, Harry Fenn, Seymour J. Guy, William Keith and Lars G. Sellstedt.

Bibliography.—Among the important books on American art published in the United States during the year were *John La Farge* by Royal Contissoz, and *Winslow Hamer* by William Howe Downes. The *American Art Annual*, Volume IX, 1911, contains the reports and officers of the museums and art societies, information regarding professional art schools, and illustrations of numerous paintings that have received awards during the year. The special features are a list of all the important mural decorations in the United States, a list, with birth and death dates, of all members of the National Academy of Design from its foundation in 1826 to date, and an article on "Paintings, Prints, and Art Objects as Investments."

ETCHING

F. Weitenkampf

Until the end of the Civil War, etching was employed in this country mainly by professional engravers, as an auxiliary to engraving, a basis for work to be carried on with the burin. William Charles, during the war of 1812, and D. C. Johnston somewhat later—rather weak reflections of Gillray and Cruikshank, respectively—utilized the medium as a vehicle for caricature. There were some early attempts at etching by

painters, e. g., William Dunlap, Benjamin West and Robert W. Weir, but they were generally of no great moment and did not represent continued effort. Later, J. G. Chapman and George L. Brown etched some Italian scenes, those by the former especially being noteworthy at most for neat precision, weakened by too free a use of the ruling machine.

The first impulse to the practice of painter-etching came through the visit to this country of Cadart, the Paris publisher, in 1866. While his exhibition and his attempt to form a society of etchers did not have startling results, they did at least lead such artists as C. H. Miller, Edwin Forbes, J. M. Falconer and Victor Nehlig to try their hands at etching, which A. W. Warren had already practiced with understanding. Hermann Carmiencke, Emanuel Leutze and others were also identified with this period.

In 1877 the New York Etching Club was formed, and became a noteworthy center of effort; other etching societies were founded in Philadelphia (1880), Boston (1880, E. H. Garrett, President), Cincinnati (1880), and Brooklyn (1882). The movement spread so rapidly that as early as 1881 an important exhibition was held in the Boston Museum of Fine Arts, and another in Philadelphia in 1882-3. The work of woman etchers was shown at the Boston Museum in 1887 and in New York (Union League Club) the following year. A particularly noteworthy characteristic of this movement was the quick grasp of the nature and possibilities of the process on the part of a number of painters. And a further interesting feature was the frequent appearance of pure landscape, as we find it in the etchings of the Englishman Haden. Such exposition of the beauty and charm of landscape in its impression of mood through the artist was made by J. D. Smithie (a noteworthy figure in the history of etching), R. Swain Gifford, Samuel Colman, Thomas Moran, Mrs. M. Nimmo Moran, W. L. Lathrop, Dr. L. M. Yale, T. R. Manley, Stephen Parrish, C. A. Vanderhoof, W. C. Bauer, J. C. Nicoll, J. H. Hill, Benj. Lander, H. D. Kruseman van Elten, Henry Farrer and Mrs. E. L. Pierce Getchell. Charles A. Platt was particularly successful in the rendering of water, and Joseph Pennell was beginning the delineations of city views in which he was to achieve so quick a grasp of essentials. Figure subjects were the specialty of F. S. Church, Frederick Dielman, I. M. Gaugengigl, Mrs. A. L. Merritt and Mary Cassatt; the last-named has shown a remarkable combination of artistic tact and psychological insight in a number of "mother and child" drypoints. J. Foxcroft Cole, Peter Moran and J. A. S. Monks signed sheep and cattle pieces.

Apart from the concentration of effort around the nucleus of organization there occurred also, in the eighties of the nineteenth century, the activity of Frank Duveneck, Otto H. Bacher and others in Venice, under the influence of Whistler, who had etched his first plates in France in the late fifties and had found his way to ever increasing economy of line. At about the same period came the independent development of Robert F. Blum, and the interesting experiments of J. Alden Weir and John H. Twachtman, S. L. Wenban and Charles Corwin are also to be recorded. Thus, the variety of effect possible to the medium was evidenced by widely differing artistic individualities.

But painter-etching began to languish. And reproductive etching, to which the busy activity of publishers had won more than one painter (Hamilton Hamilton, Walter Shirlaw, Winslow Homer, Thomas Hovenden), as well as such able professional etchers as Smillie, S. A. Schoff, J. S. King, S. J. Ferris, also decayed not very long after. It was a brilliant period of financial success, with much promise, much work of high merit, and much healthy evidence of an appreciation of the true nature of etching. Over-commercialization brought on a period of desuetude.

In recent years we have witnessed a revival of painter-etching, unobtrusively evidenced. The art has been taught at the National Academy by the late J. D. Smillie and by C.

F. W. Mielatz, and at the Art Students' League by Charles H. White and George Senseney. Etchings again form a welcome pendant to the exhibitions of the American Water Color Society, effort in the middle West is centering around the newly formed Chicago Society of Etchers, and active interest in the art extends thence to California. Mielatz (the dean of the movement, and whose best work is of to-day), White, B. J. Olssen-Nordfeldt, Henry Winslow are emphasizing the attraction and beauty to be found in our cities, where John Sloan finds material for humorous comments on certain aspects of humanity. Alexander Schilling interprets landscape with summary indication, and Cadwallader Washburn's American scenes also are principally descriptive of the beauties of field and woods, while his Mexican views have architectural interest. J. André Smith records beauty of field and farm as he finds it. The characteristic portraits of O. J. Schneider illustrate a not much cultivated field. George C. Aid, Herman H. Webster, D. Shaw MacLaughlan, Lester G. Hornby, G. W. Chandler, Ernest D. Roth, Everett L. Warner, Albert Worcester, have found in France and Italy subjects to suit their taste and moods, in which the the spirit of Whistler and Meryon has had its influence. Mielatz's interest in technical processes is shared also to a certain extent by Manley, Ozias Dodge (who uses a combination of sun-printing and etching) and Addison T. Millar, whose unpretentious bits of roadside and meadow often show the application of soft-ground, aquatint or other aids. Such aids are used also by George Senseney and Vaughan Trowbridge in their color-prints.

The significance of this renascence of painter-etching lies in the general recognition of the necessity of understanding the possibilities and limits of the process and finding within these limits scope for the expression of an artistic individuality. This, and the opportunities offered the painter for a changing point of view by the practice of a fascinating art, constitute an element of importance which gives the renascence of painter-etching decided and increasing weight in the development of art life in America.

PHOTOGRAPHY

CHARLES F. BERG

It is generally contended in artistic circles that things scientific cannot be artistic, but in photography at least this contention does not appear to be well founded, for paradoxical as it may seem, the great advance which has gone on in the science of photography has been paralleled by an equal advance in the artistic results. This is especially true of the last decade.

Scheele, in the latter part of the 18th century, discovered the darkening action of sunlight on silver chloride; Daguerre, in the early part of the 19th century, made positive prints on polished silver plates; Fox Talbot, with his colotype process, gave the means of making negatives, from which positive reproductions could be made by contact with a sensitized plate or paper. These processes were all very slow, that of Daguerre requiring half to one-hour exposure, and the colotype two or three minutes.

Within the last year or so the principal developments have been along the line of rapidity in the four essentials to every photographic outfit, the lens, the shutter, the plate on which the photographic negative is registered, and the sensitive emulsion, whether coated on paper, glass or metal, so that now records are made with the greatest accuracy in a very small fraction of a second.

In all its varied phases nature may be accurately registered, and with every degree of certainty. Aside from accuracy and speed, bulk and simplicity in both instrument and manipulation, is attracting the attention of the manufacturers of photographic materials.

Cameras. — Numerous important

improvements are being made on the hand camera of the "Reflex" type, which can be used with either glass plates or films. With this type of camera it is possible to view the image in the true size it will appear in the negative up to the instant of exposure, and making exposures of any duration, from time to 1/1000 of a second. This form of camera is now almost universally used by the newspaper photographer. The focusing hood opens automatically with the opening of the camera, and with the eye shield fitting the contour of the face, permits the operator to view the image on the focusing screen, right side up.

Papers.—Many new improvements in the sensitized paper have been placed on the market within the last year, permitting enlargements to be made with more charming effects than heretofore; the new papers give more latitude to the worker, and the resultant picture is less hard than the old time bromide. Besides these enlargement papers, numerous new papers for contact printing have been brought out, giving varied tones and effects, depending much on the ability of the worker.

Tabloid Developers.—Another convenience now much in vogue, and likely to grow in popularity, is the tabloid form of developer, comprising almost all of the usual recognized formulae; the tabloids are most compact, and as they preclude to a very great extent the chances of deterioration from oxidization, they become a most desirable adjunct in traveling. These were first introduced in England by Borroughs & Wellcome, but are now being made in this country.

Color Photography.—In color photography, or autochromes, especially with the Lumière process, the improvements have been in the line of facility and simplicity of manipulation. Several new methods have been introduced in England, but have not found their way to the American market. F. E. Ives, of New York, has patented this year a three-color method, the emulsion being so arranged that all three receive the action of the light at one exposure.

Kinemacolor.—Of greatest interest in the color line has been the introduction to the public in this country of the moving pictures in color known as "Kinemacolor" (Urban-Smith patents). The results are most graphic and true. The process in a general way may be explained as follows: the moving objects are taken in somewhat the usual manner, but at the same time the exposures are being made, screens of green and red pass before the lens coincident with the various exposures, with the result that automatically negatives are made for color values, the record being not in color, but in a scale of grays. For projection on the viewing screen, the positive films are rotated with the color screens revolving before them in the same sequence as originally taken; the grays of the color-value record are thus retranslated into the original tints, which appear on the screen.

ARCHITECTURE

H. Van Buren Magonigle

In this place, in the issue of 1910, an account was given of the forces that have been potent in the past and are shaping the present and the future of architecture in the United States, together with a very brief survey of our architectural history and its antecedents; the work of the year was, designedly, not reviewed, for the reason that this subject, at least, requires a background in order that the accomplishment of a twelve-month may be seen in its proper relation and perspective; it is to be supposed that one who possesses the first volume will also have the succeeding ones; if so, these chapters will be for him a chronicle, necessarily summary, but fairly comprehensive, of the whole progress of this art in America; and when the record shall have been brought down to date he will better understand the significance of next year's achieve-

ment, its relation to the past and the promise for the future.

The activities of the several architectural societies touched upon last year may be considered as abstract, or at least as impersonal, factors in our development; but it is to certain salient personalities that American architecture owes its renaissance, men whose destiny it was to lead the profession during their lifetime, and, in the case of two of them, to give an impulse to the thought and taste of the day that has survived the pressure of a current setting from France which bade fair at one time to overwhelm it. And yet it was the training of France that gave us Richard Morris Hunt, Henry Hobson Richardson and Charles Follen McKim; and although Stanford White did not study under the ægis of the Ecole des Beaux Arts, he was a student in Richardson's office and became his chief assistant. Before their advent our traditions in thought and theory were derived from English sources and England has never possessed the vital spark of architecture; when these men turned toward France the paths they trod led us on toward Italy, Rome and Greece.

Richard Morris Hunt.—In the studio of Richard M. Hunt were formed and trained many of the strong men of this day; he left the souvenir of a genial personality; he was adored by his students and assistants; and this personal influence exerted for all that is highest and finest in professional ethics is a legacy of inestimable value. He helped to make the profession of architecture respected at a time when the carpenter and the architect ranked in the order given. He founded no school, nor did he leave any personal or lasting impress upon the art of his time; this may perhaps be ascribed to his position as a pioneer, coming at a moment when taste was at ebb tide—and the general taste of a period almost inevitably reacts upon the artist. The Lenox Library and the Tribune Building are two of his works that reveal the tendencies of his French education, and that his taste developed and his talent ripened as time went on the Cornelius Vanderbilt house, a masterpiece of design, is eloquent witness.

Henry Hobson Richardson.—Richardson was another interesting figure, a giant in bulk and stature, whose work did not belie the promise of his robust presence. He was one of the first American architects to come from the Ecole des Beaux Arts, but on his return to this country and entering practice, his native tendency, romantic rather than classic or scholastic, asserted itself more and more strongly, and he ultimately developed a type of architecture that became known as Richardson Romanesque and which was imitated everywhere; but whereas Richardson went back to original sources for his inspiration—the character of his wall surfaces and openings being derived from Romanesque and possibly from Spanish origins, that of the ornament from the Byzantine—his imitators sought no further than Richardson, with the inevitable result; they seized upon the non-essentials of his style and exaggerated his faults, which were many, to an absurd degree. He was fond of short, sturdy columns and deep, heavy arches; his followers out-Heroded Herod. Fitness of form to function is an infallible touchstone in architectural criticism — their forms were epileptic. His ornament was luxuriant but well designed and applied with judgment; their buildings broke out in loathsome eruptions of misapplied decoration.

But in spite of its virility his style was doomed to pass. Drawn from mediæval sources, it was not adapted to practical modern needs; openings were so small and walls so thick that many of his buildings were poorly lighted; he sacrificed light, air and convenience to his love of wall surface and mere exterior effect; but his faults were the faults of a master—a master whose style and genius were so intensely personal that imitation was impossible and fell over the brink into the abyss of caricature. One of the foremost architects of the country declared that Richardson at his death bequeathed to American architecture the most dangerous legacy of any architect that ever lived. On the

other hand, it has also been said that before he died, those close to him perceived a growing preference for Classic forms, and that if he had lived a few years more (he died at forty-eight) he would have given us mighty works in the classic spirit —an interesting speculation.

Before he came the country was sunk in a dull slumber; we had this awful nightmare and then opened wondering eyes on the World's Fair at Chicago; it was that marvelous spectacle that stemmed the tide and turned men's thought into a new channel; they caught a glimpse of "the glory that was Greece, the grandeur that was Rome."

Charles Follen McKim.—How far Charles F. McKim guided his colleagues in the board of architects in their decision to adopt classic forms for the buildings at Chicago we do not know, but his influence was undoubtedly strong. His work had been growing in power and authority; Richardson had died some years before and the firm of McKim, Mead & White were in possession of a leadership assured to them by a long series of works of compelling beauty. McKim had been a student in Richardson's office and that he was so little influenced by that robust genius is indicative of his personal force; Royal Cortissoz has pointed out that after all native taste was the determining factor in this artist's career, and McKim's taste was invincibly different from that of his early master. He, too, entered the Ecole des Beaux Arts, but apparently had but little sympathy with its teachings, and did but little work in the school. His tendency toward the art of Italy became more marked as time went on, widening from the works of the Renaissance to include the architecture of ancient Rome, more sympathetic to his taste than Greek forms. He was always more preoccupied with the external aspect of a structure, with the possibilities of interior monumental effect than with plan; this alone would serve to indicate his lack of interest in the tenets of the Ecole where the plan is of prime importance and the exterior and interior are determined by it and grow naturally from it; but so far as my personal observation of his method goes, McKim usually seemed to determine the elevation first and then work out a plan that would fit it more or less closely. He worked very slowly, developing his idea almost painfully, bit by bit. It has been said of him that he never put two moldings together unless he could find a precedent for that particular juxtaposition. This may be taken to mean an intense respect for tradition and precedent rather than timidity; for his work was always strong. And in spite of the close adherence in the main to the model he chose to follow and adapt, he added something that was not there before. He believed, I think, that certain things had been said once and for all as well as they could be said, and it was enough to repeat them reverently—the modern accent would be bound to betray itself and differentiate it from the original utterance. It might be supposed from these traits that nothing original or fresh could proceed from such a method; the reverse is the case. In architecture, as in literature, originality is the result of having something to say; a writer does not invent a new alphabet or a new vocabulary in which to express himself, but uses the language to which he is accustomed, finding new combinations of the old familiar elements to convey his thought and delight the world. McKim and his partners took this view; when they first began to make themselves felt, the architects of America seemed to believe that they must avoid the work of the past as they would the pestilence, and were either flopping helplessly about trying to be "original" or travestying the great gesture of Richardson; they needed to be led out of the slough, and McKim, Mead & White showed the way with the courageous humility of great artists who dared to repeat or adapt the work of other great men of other days.

Besides contributing to architectural education by the force of his example, McKim aided the cause directly by the gift of a scholarship to Columbia University and by founding the American Academy in

Rome. The foundation of a great Academy there that should be for the artists of America what the Villa Medici is for those of France was a dream to whose fulfillment he gave heavily of his time, money and persistent effort. The Academy is now an accomplished fact, with an endowment of nearly a million dollars and a home on the Janiculum.

Charles F. McKim and Stanford White had in common their respect for tradition and their love of things Italian; in mind and temper and method they differed as widely as the poles. McKim's mind worked slowly and he matured his designs deliberately; White thought like lightning, reached decisions in a flash for good or ill, and his results were naturally more spontaneous; he gained perhaps in charm, but his impatient nature and swift insight could not brook the slow ripening process that gave McKim's work its scholarly distinction. He had been Richardson's chief assistant and had a large share in Trinity Church, Boston. I believe his eager restless temperament was most at ease in dealing with the romantic and picturesque; it is certain that his sketch books bear out his early preference for the pictorial. His was a character of many facets, his mind was as flexible as a whip lash, and his taste, catholic in the extreme, ranged over the whole world of art. Of terrific dynamic force, he seemed to reincarnate one of the swift geniuses of the Renaissance; and he was equally at home in the design of a book cover, of a great building or in organizing a *fête*.

It is remarkable that two men of such extraordinary ability should have joined forces, agreed so perfectly in the fundamentals of their work, have differed so in their methods, and yet have presented so united an artistic front to the world. The public at large does not discriminate between the work of the two men; but it is sufficient to point out that McKim was the author of the Boston Public Library, the University Club, Columbia University and Mr. Morgan's Library, and that White designed the Madison Square Garden, the Century and Colony Clubs, the New York University, the Gorham Building and the Madison Square Church, to make one aware instantly of the difference in their genius and their temperament.

For many years Joseph Morrill Wells was associated with them, and died just as he was about to be made a partner. He influenced them both strongly; indeed, Mr. McKim told the writer that he had learned more from Joseph Wells than from any other living man. Working together they founded a school and established a tradition that still persists when all three have passed away; their office was the greatest training ground for architects we have had or are likely to have; if we were to take at random one hundred architects over thirty-five years of age now practicing it would probably be found that seventy-five per cent. at least had been for a longer or shorter time in their employ. Today the field may be said to be fairly divided between the men who were trained in the office of McKim, Mead & White or of men of their school, and those who have studied in the Ecole des Beaux Arts, or the ateliers conducted by the Society of Beaux Arts Architects.

They have been called the greatest of all "model makers," because of their adaptations of ancient buildings to modern needs, and their use of Classic and Renaissance details copied straight; these "models in full size" have been at once a source of instruction and inspiration, contention and invective. But their value as contributions to the progress of American architecture by furnishing a measure and a standard of taste is incalculable. The architects of Europe work under the restraining and supporting influence of a body of tradition and precedent and live within easy reach of the great buildings of the old world. To bring these within our reach was a part of the success of these men and a part of their notable bequest to us. In their choice or combination and treatment of materials, in textures, in what we call "execution" or the translation of the architect's drawings into terms of brick and stone, they were without rivals. They

were the direct cause of a wonderful development in the marble and stone industries, encouraging men to ransack the quarries of the earth for the materials that the Greek and Roman and Renaissance worlds knew, but which had been forgotten or neglected. They were able, through their rich *clientèle* and extensive practice, to extend a considerable patronage to the sister arts of sculpture and painting; and when electricity came into use as an illuminant the fertile imagination of Stanford White seized upon its possibilities and inspired the creation of a new and notable craft. And in every branch of the constructive and decorative arts may be traced evidences of the extraordinary range of their influence.

Influence of the Ecole des Beaux Arts.—Preoccupied by beauty of form, and limited in this respect by their training, they cared but little apparently for the science of planning as it is practiced and taught in France; to the Ecole des Beaux Arts and the men in sympathy with its teachings we owe the corrective force of plan. It can scarcely be controverted that in plan as plan is to be found the germ, the principle of growth toward the true expression of the people of any period in their architecture; their mode of living, of conducting their public and private business, can be judged better from the ground plan of their structures than from their façades, because it reveals the juxtaposition of the various apartments, their relative size and scale, the relations of the openings to the walls, and all the thousand and one details that show the practiced eye how life went on within doors. And the scientific grouping of the apartments to meet the special requirements of a given problem often, usually, produces a new plan and the true expression of this new plan a new and fresh façade. Far too often the admirably articulated skeleton is clothed upon with a skin and a complexion far from beautiful. The French school can teach plan and the logical expression of the plan; they cannot and do not attempt to teach taste and a sense of beauty, but in their wisdom send the flower of their students to Rome to spend four years in intimate contact with the beauty of the antique world. From about 1890, American students in ever-increasing numbers have entered the generously opened doors of the Ecole; in too many cases they have failed to realize that the French consider the school as a place where a man receives a technical training only, to be supplemented and perfected by travel and by serious study of ancient monuments. To this end they hang up the Grand Prix de Rome; it is true that only one of the many reach this goal each year, but it is upon the Grand Prix men that the guidance of the new generations of students devolves in later years. In their failure to appreciate the facts or the bearing of the facts, Americans learn as much of the science of their art as possible in the short time that is theirs and return here, usually well grounded in plan and certain technics, too often to enter practice at once not only without the corrective influence of a thorough study of the antique, but without passing a sufficient apprenticeship in the offices of riper men. To this mistaken course may be ascribed the execution in this country of immature designs modeled upon school exercises that were only exercises and never meant to be built. We passed through an epidemic of modern French design that threatened at one time completely to vulgarize the architecture of the country. Nevertheless, the sound principles of plan and design (in contradistinction to tasteless and vulgar applications of these principles) in which the Ecole men are grounded are beginning to prevail; it is unquestionably true that without the ideas they brought back upon the importance of plan as the basis of architectural design we might easily have drifted into lifeless, meaningless repetitions, or relapsed into the "originality" that characterized the work of the worst period of American architecture.

The influence of the Ecole des Beaux Arts upon American architecture is comparable to that of impressionism upon the art of painting; they both leave a residue of truth that modifies our vision, and when

the new ideas are thoroughly assimilated and the vagaries that invariably dog the footsteps of the leaders of a movement have been left behind we should be a long step in advance toward preëminence in architecture, taking as our staff the proper principles of plan and in our scrip the treasures of the beauty of the past.

LANDSCAPE ARCHITECTURE

JAMES STURGIS PRAY

City Planning.—The unusual development noted in the first edition of the YEAR BOOK as rapidly taking place in the art of landscape architecture still continues. Particularly noteworthy is the very general awakening of public interest in that portion of the field which deals with the problems of city planning. Everywhere the evils which arise from the congestion of population and the congestion of traffic in our great cities are leading to an earnest search for a remedy, and more and more, as intelligent thought penetrates this difficult problem, it is being found that the real solution lies in more rational planning of the built-over and the open areas of the city with a thorough recognition of the unity of function of the whole. (See XI, *Municipal Government.*)

The Profession.—The growth of public and individual interest in the improvement of private as well as public grounds and the judicious treatment of beautiful landscape for its preservation has continued to lead good men to enter the profession in increasing numbers, and this increase has registered itself in the enrollments in institutions giving instruction in the subject. Thus, the applications for membership in the American Society of Landscape Architects, the highest court of professional opinion, have notably increased, and the Department of Landscape Architecture in Harvard University, which still offers the only opportunity in this country for a thoroughgoing professional training on a graduate basis, has shown an encouraging increase in students admitted and in resources. So large is the demand for trained men now to fill positions in offices that this Department is still unable to graduate the men quickly enough to meet it. The Department will soon produce a bibliography of landscape architecture and city planning, covering all important works on the subject to date, including articles in pamphlets and periodicals.

Interest in landscape architecture has grown particularly in the South, Southwest, and West, where there has long been a need of the profession's services.

Urban Open Spaces.—Areas once set apart for public recreation have still to be strenuously defended against the encroachments of private interests and the equally dangerous unintelligent attempts of those who are seeking public good; but a summing up of the results of many local contests to preserve park areas against encroachments of other public functions, however important, shows a deepening public realization of the value of open spaces in cities and of the wisdom of condemning for school or other public purposes lands not already set apart for public recreation.

Exhibitions and Congresses.—An unusual number of exhibitions of the works of landscape architecture have been held in different cities of the country, illustrating both the general work of the profession and the special work in city planning. Among these exhibitions those in Philadelphia, Chicago, and Providence, R. I., were the most influential. The two most important strictly professional events have been the Boston meeting on March 21, 1911, of the American Society of Landscape Architects, at which President-Emeritus Eliot of Harvard University gave the principal address, setting forth the duties of the profession and its compensations; and the Third National Congress on City Planning and the Problems of Congestion of

Population held in Philadelphia on May 15, 16, and 17, at which addresses on both the professional and the social aspects of municipal improvements were made by representatives of many coöperating callings.

The official organ of the profession, *Landscape Architecture*, has received encouraging support and the publications of professional interest have been numerous. Among others, the following professional reports have appeared during the year:

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ARCHÆOLOGY

CLASSICAL ARCHÆOLOGY

William Nickerson Bates

During the year, the American excavations conducted by Richard Norton at Cyrene in Northern Africa, and by Howard Crosby Butler at Sardis in Asia Minor, have made good progress.

Cyrene.—At Cyrene the work was chiefly directed toward clearing a group of public buildings on the acropolis. In the course of this work a number of important marbles came to light, including a head of Athena of the best period of Greek sculpture; a headless female figure about six feet high resembling the Victory of Samothrace; four headless female statues, greater than life size, of the fourth century B. C.; fifteen half-length, life-size statues of women; a fine portrait bust of a man of the first century A. D., besides more than twenty other sculptures. On the northwest slope of the acropolis, a great deposit of votive offerings was discovered, among which were more than 3,000 terra-cotta figurines. Great quantities of vase fragments, dating from the seventh century B. C. to the time of the Roman Empire, were also found, as well as a considerable number of inscriptions. The excavators worked under great difficulties, and Herbert Fletcher De Cou, the second in command, was shot from ambush by three Arabs and instantly killed.

Sardis.—At Sardis the work of excavating the temple was continued. A Greek inscription in the wall showed that the building was dedicated to Artemis. Many tombs in the old Lydian necropolis were opened, but they had all been plundered in antiquity. Two Lydian inscriptions longer than any hitherto known were found, and seem to prove that the Lydian language was related to the Lycian. (See XXXIV,

Epigraphy; and XXXV, *Indo-Germanic Philology.*)

In Greece, excavations have been carried on at many places, chiefly by the Greeks.

Athens.—At Athens it was found that the ancient level of the Ceramicus lay considerably below the modern level, and that several important tombs, such as that of Dexileus, were much higher than the ancient street. Near the "Theseum" a beautiful torso of Apollo, which may have been the work of Euphranor, was excavated. The work of restoring the Propylæa progresses slowly.

Discoveries of considerable importance were made on some of the western islands of Greece.

Corfu.—Our knowledge of archaic Greek sculpture has been greatly increased by the discovery at Corfu of an archaic temple with the sculptures of the west pediment practically complete. They represent a kneeling Gorgon clinging to the leg of the horse Pegasus, while Perseus approaches. On either side of this group is a colossal lion; in one corner, Zeus fighting a giant; in the other, a woman seated before an altar-like building. The temple was perhaps dedicated to Apollo.

Cephalonia.—On Cephalonia, considerable remains have been found, dating from about 3,000 to 1,000 B. C.; and at Leucas Dörpfeld has brought to light abundant evidence of Achaean civilization.

Mount Lycaeus.—On Mount Lycaeus, in the Peloponnesus, the ancient hippodrome, stadium, a building for entertaining strangers and another unidentified building with an Ionic portico, were excavated by Greek archaeologists.

Olympia.—At Olympia, the finding of a Protocorinthian potsherd beneath the temple of Hera has proved that the building cannot be older than the eighth century B. C.

Sparta.—The British School at Athens has completed its excavations at Sparta. There was a large Mycenaean town located on the hill where the shrine of the hero Menelaus was discovered. This was destroyed by fire and the historical Sparta founded in the plain by the Eurotas in the early Iron Age.

Tiryns.—In the palace at Tiryns remains of important frescoes have been uncovered. They fall into two groups, an older group in which are two female figures, a charioteer and a man driving a herd of cattle; and a later group, representing hunting scenes, etc., dating from the third Mycenaean period.

Crete.—In Crete important discoveries have been made by J. Hatzidakis at Tylisus, six miles west of Candia and Cnossus. A palace similar to those already uncovered at Cnossus and at Phaestus has been partially excavated. It had been destroyed by fire and the movable articles carried off. It was originally two or three stories high and belonged to the Late Minoan period (*circa* 1600-1300 B. C.); but traces of the Middle Minoan period (*circa* 2200 to 1600 B. C.) were found in a lower stratum. Two tablets in the Cretan script, fragments of wall paintings, a beautiful bronze statuette, 12 inches high, a steatite vase, and several bronze vessels, were among the objects discovered. Near the river Gazes, north of the town, a cemetery of the Middle Minoan period was discovered and will be excavated.

Asia Minor.—In Asia Minor, the important sanctuary of Men Askaenos at Pisidian Antioch has been found on the top of a mountain, 5,000 feet high, four miles southeast of the ancient town. There was no temple, but an enclosure with a great altar and a stadium or small theater near by. A considerable number of Greek inscriptions, dating chiefly from the third century A. D., were copied from the precinct wall of the sanctuary.

Pompeii.—In Italy the most important discoveries were made at Pompeii, where a house of more than twenty rooms has been excavated near the Porta Ercolese. The walls were decorated with beautiful frescoes representing Bacchantes in light drapery, Bacchus and Silenus, flagellation scenes, a dancer with castanets, etc.

Rome.—In Rome many minor discoveries have been made, the most important being a fine portrait statue of Augustus.

EPIGRAPHY

HARRY L. WILSON

Greek Inscriptions.—During the year 1911 the amount of work published by American scholars in this field has not been great, but there are, nevertheless, interesting and important contributions to record. To begin with, Allan C. Johnson has issued his doctoral dissertation (Johns Hopkins), which is a comparative study in selected chapters in syntax of Isæus, Isocrates, and the Attic decrees preceding 300 B. C. Short but valuable articles are by D. M. Robinson, who published the inscription on a panathenaic vase giving an archon's name earlier than any hitherto known to occur on such vases (*American Journal of Archæology*, XIV, p. 424); and by C. D. Buck, who corrected the punctuation and interpretation of a new Argive inscription previously edited by Vollgraf (*Classical Philology*, VI, p. 219). In *Harper's Monthly Magazine* for January, under the title "The Solving of an Ancient Riddle," George Hempl attempted to interpret the inscribed disk of Phæstus. Proceeding on the assumption that the language is Greek and is written from right to left, he worked out in a most ingenious fashion the values for the various signs, and offered a translation of the opening lines, which in his opinion refer to the sacrifice of cattle given as reprisal for the plunder of a shrine. Not strictly Greek, but worthy of mention here because of their prime importance, are the two Lydian inscriptions published by H. C. Butler and A. Thumb in the *American Journal of Archæology*, XV, 149 ff. These were found last year in the American excavation at Sardis, and though they cannot yet be interpreted successfully, they furnish ground for the belief that the Lydian and Lycian languages were closely related in alphabet, in their phonetic systems, and in the forms of their words.

Etruscan Inscriptions.—At the annual meeting of the American Philological Association held in Dec., 1908, a letter was read from George Hempl announcing that he had succeeded in reading some 50 Etruscan inscriptions, and found the language an Italic dialect of the Latin-Faliscan group. This revolutionary announcement aroused lively expectation among those present, who have ever since been eagerly awaiting some justification of the claim. Finally, in the *Matzke Memorial Volume* published at Stanford University, we find a brief article in which three early inscriptions are translated and interpreted in the light of assumed relationship to Latin. Hempl's view is that Etruscan and Latin are sisters which in their early stages are hardly to be distinguished. The application of this principle to a large number of texts must be awaited before a final judgment can be pronounced upon the theory, which has hitherto been rejected by practically all philologists.

Latin Inscriptions.—Since the last report was written some interesting studies of Latin inscriptions from the pen of American scholars have appeared, and several hitherto unknown epigraphical texts have been published. At the annual meeting of the American Philological Association, held in December, 1910, Miss Florence M. Bennett read a new interpretation of the Duenos inscription, a synopsis of which is now found in the *Proceedings* of that Association, vol. 41, xxi-xxiv. H. H. Armstrong also, in the *University of Michigan Studies, Humanistic Series*, III, pp. 213-286, treats of autobiographic elements in Latin inscriptions. In more than 2,200 inscriptions most of which are sepulchral, he finds the personal element present, revealed chiefly by the employment of the first or second person instead of the third. Finally, new inscriptions were published by Walter Dennison and H. L. Wilson. In *Classical Philology*, V, 285-290, Dennison edited and restored a fragment found by him in the Villa Borghesi at Pratica in Latium. The inscription, which refers either to Constantius or to Constantine, is the latest dated monument of ancient Lavinium, and bears witness to the official existence of the town down to the fourth century. Continuing his discussion of Latin

inscriptions at the Johns Hopkins University, Wilson in the sixth article of his series added twenty-nine sepulchral inscriptions to those previously published. (*American Journal of Philology*, XXXII, p. 166-187.)

AMERICAN ARCHÆOLOGY

The study of the prehistoric archæology of the Americas is fundamentally a branch of anthropological research. Its results are primarily of anthropological and ethnological significance, and have little of the artistic interest associated with classical archæology. No attempt has been made, therefore, to review American archæology individually; the year's progress is recorded in Dr. George Grant MacCurdy's article "Anthropology, Ethnology, and Prehistoric Archæology," in Department XXIX.

MUSIC

Herbert F. Peyser

A bird's-eye retrospect of the year 1911 impresses one with the fact that its musical significance has been considerable in almost all fields save that of music proper. This paradox explains itself readily to one who makes due note of the general status of the creative output and then contrasts the result with the number and character of activities to be observed in other departments of the tone world. In the paucity of newly produced compositions of genuinely enduring qualities the period under consideration seems not very far behind its predecessor. However, if creative labors have evolved little of momentous consequence much has been consummated along other lines of musical endeavor. And in such matters America has run Europe a fairly close race, vying strongly with it in details of interest.

Grand Opera.—It may be recalled that the predominant event in the world of American music during the year 1910 was the complete revolutionizing of the operatic situation through the withdrawal of Oscar Hammerstein. One of its most far-reaching results was the formation of an opera company having its headquarters in Chicago, under the management of Andreas Dippel. There had been some misgiving when the plan was first broached as to whether or not that city would find the support of an opera company an easy matter. The very first season, however, amply vindicated Chicago's right to such an organization. The city responded with an alacrity that quite upset the calculations of even the most sanguine, and the outcome was a financial profit—something almost unprecedented in the operatic annals of America. Ministration to the musical wants of Philadelphia was another of the duties that devolved upon the company, but in this instance the monetary outcome was less gratifying. The Philadelphia engagement in February and March resulted in a good-sized deficit, which Philadelphians were confronted with the alternative of removing or else foregoing further operatic pleasures from the same source. The embarrassing question was solved by the eminent financier, E. T. Stotesbury, who in March offered to disburse $45,000 as Philadelphia's share of the losses and also guaranteed to pay any deficit of the following season up to the amount of $100,000.

In addition to its work in Chicago, Philadelphia and some of the smaller cities the organization made a series of "guest appearances"—to use a Germanism—at the Metropolitan Opera House in New York. The fact is worthy of record mainly for the reason that at this time the Chicago company gave its first American hearing to Wolf-Ferrari's charming opera-buffa "The Secret of Suzanne" (March 14), Jean Nouguès's musically attenuated "Quo Vadis?" (in Philadelphia, March 24 and New York a few days later), and Victor Herbert's newly completed American opera "Natoma," which will be considered in more detail presently (Philadelphia, Feb. 26, New York, Feb. 28).

Coincident almost with the opening of the Chicago company's following season arose a dispute between Mr. Dippel and the Italian publisher, Ricordi, relative to the excessive royalties on the operas of Puccini, the performing rights of which were controlled by the Ricordi firm. The outcome of the controversy was the total elimination of Puccini from the répertoire of the Chicagoans.

Shortly after being debarred from producing opera in America for a period of ten years Oscar Hammerstein concluded to transfer the seat of his activities and try his fortunes as a purveyor of opera in London. Undismayed by the competition of the venerable Covent Garden institution, reports of British scepticism toward projects of the kind and the rapid decline of Thomas Beecham's meteoric prestige, he set to work, erected an establishment which he called the "London Opera House," and opened it with a performance of "William Tell" on Nov. 13, barely a year after ground had been broken for the new building. Complete success rewarded his energy up to the close of the year at least, and the most emphatic approval was bestowed on his productions as well as the work of several but little-known American singers in his company.

The most enduringly successful of the novelties brought forward by the Metropolitan Opera Company in New York during the year was Humperdinck's "Königskinder," which, though given its first hearing on any stage there a few days before Jan. 1, may yet logically be regarded as a distinctive feature of 1911. With the exquisitely poetic and emotional drama of "Ernst Rosmer" (Elsa Bernstein) as libretto, Humperdinck's score proved a masterpiece of melodic, harmonic and instrumental appeal, even though cut faithfully on the Wagnerian bias and consequently not a product of compelling originality. Its success was sensational not only during the first season but also during the succeeding one. On March 29 was brought out for the first time in America Paul Dukas's four-year-old "Ariane et Barbe-bleue," a setting of Maeterlinck's symbolic drama. Dukas's music, though strongly tinged with the harmonic idiom characteristic of Debussy and as a result forbidding to such as had neglected to cultivate a taste for certain radically ultra-modern devices of composition, was acclaimed with the interest it deserved.

Early in February announcement was made at the Metropolitan that preparations were under way for the production of a one-act opera, "Twilight," by the American, Arthur Nevin, whose fated "Poia" had been so roughly handled in Berlin a year before. But though scheduled for early in March the opera was steadily deferred until it was finally stated that, owing to the emendations necessitated by the orchestral score, a postponement until the following November was imperative. Up to the close of the year the work had not materialized.

Five days after the inception of the Metropolitan season on Nov. 13 was introduced into America the fairy-tale opera "Lobetanz," by the late Munich composer Ludwig Thuille. Though it had enjoyed a German career of some 15 years, and though it caused some of its producers to entertain visions of a second "Königskinder," it was found to be of mediocre quality, despite the somewhat redeeming feature of a strikingly individual and fantastic third act.

"Mona."—It is in connection with the Metropolitan that must be mentioned the most absorbing event in American composition during the year. The prize contest of $10,000 instituted two years earlier by Director Gatti-Casazza had come to a close in Sept., 1910. For the next eight months nothing definite was learned of the outcome. On May 2 it was made known that the jury, consisting of Alfred Hertz, George W. Chadwick, Walter Damrosch and Charles Martin Loeffler had concluded to award the decision to "Mona," a three-act tragic opera by Horatio Parker, with libretto by the American writer, Brian Hooker. The date of production was ultimately fixed for the first or second month of the following year. Those privileged to examine the full partitur of the work were emphatic in their commendations and assurance that the music marked

a distinct advance both in content and maturity of style over Professor Parker's earlier compositions. The text—which was separately published in October—proved a work of rare dramatic incisiveness, poetic fancy and fertility of imagination.

"Natoma."—The two other leading feats in native opera were Victor Herbert's above-mentioned "Natoma," and "The Sacrifice," by Frederick Converse. Of the pair Mr. Herbert's opera was undeniably of more conspicuous worth. For its libretto, dealing with the unrequited love of an Indian girl for an American naval officer, Joseph Redding, a San Francisco lawyer and literary dilletante, acknowledged responsibility. Its amazing weaknesses of construction and puerilities of diction proved a sad handicap to the prospect of the opera's lasting success. Mr. Herbert's music was of uneven merit, rising to heights of powerful dramatic utterance and characterized by beauty, individuality of conception and fineness of workmanship at times, and at others sinking into comic opera banalities. Less can be said of Mr. Converse's effort, which was sung for the first time at the Boston Opera House on March 3, but never given in any other city. It disclosed an almost complete lack of experience on the part of the composer in the fundamentals of operatic composition.

Gustav Mahler continued his duties as conductor of the Philharmonic Society of New York until the close of February, when he suddenly fell sick with what was announced as grip. The concertmaster, Theodore Spiering, replaced him. On April 8 the conductor sailed for Europe, desperately ill. He was conveyed to a sanatorium near Paris, and thence to Vienna, where on May 19 he died of a complication of angina pectoris and blood poisoning. His demise caused profound grief throughout the musical world.

Josef Stransky.—Energetic steps were taken at once to provide the Philharmonic with a new conductor. The successful candidate was Josef Stransky, a Bohemian by birth, who had won fame at the head of the Blüthner Orchestra of Berlin. Making his New York debut on Nov. 2, Mr. Stransky forthwith established himself as a musician of high ideals and a conductor of eminent attainments, an opinion which his subsequent performances materially strengthened. On Dec. 28 it was announced that Mr. Stransky had signed a three-years' contract.

The Pulitzer Bequest.—In November the Philharmonic suddenly found itself lifted out of its financial tribulations through a bequest of $500,000 from the late Joseph Pulitzer. The conditions of this bequest exacted, among other things, a great increase in the membership of the society, the giving of a large number of concerts of a "popular" character and frequent performances of works by the testator's three favorite composers—Beethoven, Wagner and Liszt.

Symphonic Music.—In striking exemplification of the development of musical ideals in the west stands the formation of a permanent symphony orchestra in San Francisco by a "committee of millionaires." The backers of the enterprise included some of the most prominent merchants of the city. As conductor was selected Henry K. Hadley, the American composer, who had for some time past been associated with the Seattle orchestra. The latter, through its material straits on one hand and its inability satisfactorily to replace Mr. Hadley, on the other, determined to suspend activities for a year at least.

It should be noted at this point that, with the exception of a symphony, "North, East, South, West," by Henry Hadley (first played at Norfolk, Conn., in June) little of note was done by Americans in 1911.

The Liszt Centenary.—What is doubtless destined to go into history as one of the most distinctive features of the year 1911 is the remarkable fervor and universality with which the hundredth anniversary of the birth of Franz Liszt was observed throughout the musical length and breadth of Europe and America. Considerations of space quite prohibit even the most fragmentary account of the innumerable centenary festivities, in comparison with which the centennial honors accorded Schumann, Mendelssohn and Chopin during the two or three years preceding sink into in-

significance. Seldom has the enduring popularity of the Hungarian composer been more eloquently attested. No musical organization, however humble, but devoted some of its energies to the performance of Liszt music. Critical dissertations on the art and influence of Liszt appeared on every hand. Nor may we neglect to chronicle the fact that the old controversy regarding the artistic worth of Liszt's compositions was renewed widely and acrimoniously.

The high-water mark of the festivities occurred, of course, during October, the month of the composer's birth. Perhaps the most noteworthy single event was the celebration in Budapest from Oct. 21 to 25. It included besides a rendering of Liszt's Coronation Mass and Gran Mass the performance as a stage spectacle of the oratorio "St. Elizabeth," a concert of sundry Liszt symphonic works under the baton of his grandson, Siegfried Wagner, and a series of piano recitals by some of the most distinguished Liszt pupils living—Eugen d'Albert, Moriz Rosenthal, Bernhard Stavenhagen, Emil Sauer, Frederic Lamond and Sophie Menter.

European Productions.—No compositions endowed with anything resembling immortal properties made their appearance in any quarter of Europe during 1911, but there were, as usual, three or four productions of a nature entitling them to brief comment. Foremost of these was Richard Strauss' comic opera, "Der Rosenkavalier," which first saw the light at the Royal Opera of Dresden on Jan. 26. A composition of which so much had been predicted was bound to command widespread attention. But when a clear perspective of the work was obtained after a number of hearings it was found that Strauss' music, in spite of numberless details of superficial cleverness, added far less to his artistic stature than had been expected. Much of it was voted dull and even ardent Straussites admitted the utter commonplaceness of much of the melodic material. There were coarse features in von Hofmannsthal's libretto, too, thanks to which the German Emperor refused to countenance a Berlin production of the opera until it had gone through a more or less strenuous process of moral disinfecting. So the Berlin première did not take place until late in the fall, when various excisions and emendations had finally been made to savor the opera to the imperial taste.

While Richard Strauss brought out nothing else during the year, it was understood that he was working on an opera "Ariadne at Naxos" as well as a symphony of a highly programmatic nature, its prospective title being the "Alpine Symphony." Engelbert Humperdinck was known to be engaged on incidental music to Maeterlinck's "Blue Bird," and from the pen of the aged Max Bruch appeared a "Concertstück" for violin and orchestra. This had its first hearing at the hands of the American violinist, Maud Powell, at the Norfolk, Conn., Festival in June, but contrasted unfavorably with the earlier concertos of its composer.

Widespread interest was aroused in Paris early in the summer by the production of Gabriele d'Annunzio's mystery play, "Le Martyre de St. Sébastien," to which Claude Debussy contributed incidental music. It gave Debussy enthusiasts a fair degree of pleasure, and it was even asserted by some that Debussy had surpassed his previous efforts. Earlier in the year, on March 18, Camille Saint-Saëns brought out his opera "Déjanire" in Monte Carlo.

To further a system of protection for French musicians a so-called "Salon des Musiciens Français" was formed in December under Saint-Saëns, Debussy, Massenet and others of eminence. The object of the "Salon" was to wage a campaign against the alleged invasion of foreign composers and to give French music its due recognition. Its sessions were to be held once a year and all native composers invited to submit works for performance, medals and diplomas being offered to the best.

Italy's contributions to the year's doings consisted of Mascagni's opera "Ysobel," first acclaimed in Buenos Ayres; Leoncavallo's "Maia," which failed signally at its Berlin première in March, and Ermanno Wolf-Ferrari's "Jewels of the Madonna," suc-

cessfully given in Berlin on December 23.

In England Edward Elgar followed up his much-vaunted violin concerto of the year before with a symphony in E-flat. It was first heard in London on May 24, and immediately commanded respect for its sound musicianship.

Literature.—In remarkable contradistinction to the preceding year, 1911 furnished at least four notable literary works bearing upon musical art. First and foremost of these stands the *Autobiography of Richard Wagner*, which the composer dictated to his wife at the request of his benefactor, Ludwig II of Bavaria, after the latter had come to his assistance. The book was preserved in the archives of Wagner's Bayreuth home until a stated period after his death. Of transcendent interest as a piece of picturesque narrative, although not affording all of the revelations which many had anticipated, the book raised a veritable tempest of hostile criticism in some quarters. The character and personality of Wagner were attacked much as they had been during his lifetime, and there was widespread inclination to regard as outrageous the exposures he made of the moral character of his first wife, and his failure to relate in full the details of various matters in which he himself had been involved. Others insisted that the book had undergone a careful process of editing and revision before being given to the world. Much credence was given to this phase of the matter, in view of assertions made earlier by several individuals of eminence who were reputed to have examined the proofs and private copies of the book.

The chief literary event of the Liszt centennial was the appearance of a volume on the life and work of Liszt by James Huneker. Written in Mr. Huneker's customary scintillating style it proved, nevertheless, somewhat diffuse in form and unconventionally put together. It contained, for the most part, a fairly correct estimate of Liszt's compositions, though Mr. Huneker's insistence upon Wagner's enormous debt to Liszt seemed carried to rather unwarrantable extremes.

An American volume of compelling interest was the *Memoirs of Theodore Thomas*, by the conductor's widow, Rose Fay Thomas. Thomas' life and his indefatigable labors in behalf of musical culture in America were found to have been treated with exquisite deftness and sympathetic charm.

Of piquant significance was the volume of short musical essays by Ferruccio Busoni, entitled *A New Esthetic of Music*. Radical and revolutionary in some of its doctrines and speculations it was recognized, nevertheless, as the production of a serious musician and profound scholar.

Necrology.—The mortuary list of the year 1911 was large in the musical world. The passing of Gustav Mahler has been recorded above. Another conductor of note who died shortly thereafter was Felix Mottl, whose end occurred in Munich, July 2, of arterio sclerosis. Alexandre Guilmant, most famous of French organists since César Franck, died at Meudon on March 30. Johan Severin Svendsen, the Norwegian composer, expired on June 14; William H. Sherwood, the American piano teacher, on January 7; Bruno Oscar Klein, composer and teacher, on June 21, and Alfred Giraudet, the famed operatic basso, who had also won distinction as professor of singing, on Oct. 17.

THE DRAMA

LAWRENCE REAMER

So close is the present connection between the business interests of the theater and its artistic manifestations that to understand the ruling elements in its affairs one must be in some measure acquainted with the history of amusements in this country. It would be, for instance, quite impossible for any lay mind with no other than a casual interest in the

art of the theater to understand why so many specimens of the theater's product are annually offered to a public which constantly rejects them. It takes a comprehension of the degree to which our stage is dominated by business to find any explanation of the overproduction which fills the playhouses of the United States with such worthless offerings in the name of drama.

Our theater was inherited from England. When the first performance of a dramatic character was given in Virginia, the players were of English birth. The same was true of the beginnings of our theater in the South and in New England. It came about after a while that some of our actors were of native birth, and, in the course of time, the majority of them were Americans not by artistic adoption merely. The actors of foreign birth brought with them to the cities of the New World the methods that had prevailed in their own land. They founded for every theater a company which remained there for the dramatic season and often existed for seasons in succession, made up largely of the same members year after year. In the large cities, such as Boston and Providence, New York and Philadelphia and Charleston and New Orleans, there were always actors enough in these companies to play the dramas of the classic repertoire. Of the classics of that period there have descended to us few beyond the theater of Shakespeare, but every playhouse in the earlier days and down to the middle of the nineteenth century, possessed a comprehensive repertoire that employed permanently a company of actors that subsequently came to be known as stock companies.

Such organizations were a training school for the profession of acting superior to any other this country has ever known since, or is, for that matter, ever likely to know again. Young actors were in the course of a season called on to play many rôles. They were thrown into contact with experienced players and in every city of importance they had frequent opportunities to observe the acting of the famous stars who came to play in the stock company; for it was not long before the stars came to visit these cities, playing with the companies permanent in the theaters. There was every opportunity in that day, therefore, for a young actor to learn his art.

In the course of time some of the noted actors, instead of going alone to a city and relying on the forces in the local theaters, began to take one or two actors with them that it might not be necessary for them to go through laborious rehearsals, for the sake of the local actors, of scenes with which they were quite familiar. At first only one or two actors appearing in the principal scenes travelled with the star. Then it came about that some of the plays acted in New York required complicated scenery beyond the resources of the stock company theaters in any but the largest cities and often so special in its nature that it could be utilized in no other dramas. So it had to be brought by the actor. To Dion Boucicault in his drama "Arrah-na-Pogue," is attributed the introduction of this new element in the theater.

It was now easy to supplant the old stock companies with the so-called "combination" which dominates the stage to-day. A theater need not possess now behind its curtain more than its three bare walls. Everything from the actors to the smallest bit of painted canvas is now brought by the company of players which every week comes to the theater in the smaller city. There is no longer the stock company. All local element of theatrical art has disappeared. The combinations organized in New York travel through the country presenting as closely as possible a replica of the first production in New York. This is the latest evolution of the theater in the United States. There seems no probability that it will ever change. Experience has shown that whatever may be said of the artistic advantages of the old stock companies as a training school for actors, the present system is likely to remain in force. After this combination system was introduced, it did not take long for those managers shrewder commercially than their rivals to gain complete control of all the important theaters of the country.

After a few years this monopoly was broken and a competing combination of managers succeeded in making it possible for players to decide between one or the other of these factions. Such liberty was secured at the cost of much money invested in new theaters which would never have been necessary but for the failure of the two parties to come to an agreement.

It is necessary to have this understanding of the commercial conditions of the theater in order to comprehend the methods of the two groups of managers that control it to-day. In order to provide plays and companies for the numerous theaters which they have guaranteed to supply with material, it is necessary to bring forward so many productions that any system of artistic selection is not only impossible, but there is not even time for any evident consideration of the business chances of half the plays put before the public. So from the large number of plays and operettas annually seen, there are few of sufficient artistic importance to deserve mention. There are tendencies, however, which are highly significant of the tastes of the American public.

One of these which made itself felt last season with special force was the preference of our audiences for plays of native authorship on American themes. Charles Frohman, who is the manager most convinced of the desire of American playgoers to delight only in the foreign masterpieces, had the disappointment of seeing every success of the Paris stage which he imported to this country meet with more or less decided rejection. "Le Bois Sacre," by de Flers and Cavaillet, had been one of the recent comic triumphs of the Paris stage. As "Decorating Clementine" it puzzled and bored New Yorkers, who had little interest in the literary struggles of a woman of fashion. Both "La Scandale," by Henry Bataille, and "La Vierge Folle," by the same author, met with no approval here, although Mrs. Patrick Campbell, who has usually controlled the interest of a certain part of the public until she was placed in a drama that had such slight appeal to our public was the heroine of "The Foolish Virgin." The curious local flavor of "Suzanne," as it was known here, did not arouse the appetite of New Yorkers to see the little drama as it did the Parisians who delighted in the tang of "La Marriage de Mlle. Beulemans," which was the original title of a play that came to France as almost the first work of two genuine Belgian dramatists. The importance of "Chantecler" was unfortunately diminished by the sensational *tour de force* of entrusting to a woman the part of the hero, which is a vibrant proclamation of the power of virility. So there was was no other significance to the production of Rostand's essentially Gallic poem in this country than the appearance of a popular actress in a new role. It is doubtful, however, if the admirers of Maude Adams found much to delight them in this artistic adventure of their favorite.

The taste for the native drama manifested itself most strongly last winter in the success of a dramatic version of George Randolph Chester's stories under the title "Get Rich Quick Wallingford," which enjoyed a popularity unequalled by any other farce of the season. While there was of course a strongly national character to the fun of this study in get-rich-quick methods of finance, the piece really is not much of an advance on the old Harrigan plays in its fidelity to any life outside the theater. A much more serious and more admirable specimen of the skill of the American dramatist was "As a Man Thinks," written by Augustus Thomas with his usual inclination toward some special phase of our life and character. It was the rôle of a Jew physician in which he succeeded in revealing most strikingly the effect of Jewish character on the lives of those about him. It would not be possible for the dramatist to write a play without imparting to it some of his intellectual theories—theories, moreover, which are likely to be much more familiar to others than they seem to be to him—so there is some use of the doctrines of Christian Science as an element of the play. It enjoyed such prosperity here as to prove the extent to which our public is eager to see dramas of their own life and time. "Excuse Me," which

enjoyed a long life in New York, was more important from its strongly marked national humor than from any other element in Rupert Hughes's farce.

The success which attended the latest visit of Sarah Bernhardt to this country was a contrast to the indifference with which every other manifestation of French art was concerned. The tribute was, of course, to the personality of this unique figure in the history of the stage and a new generation found sufficient trace of her old time genius to re-echo the praises which have sounded now for upwards of half a century. Another appreciation of a poet who writes in the French tongue was the success of the symbolic play "The Blue Bird" of Maurice Maeterlinck. It remains perhaps the most successful achievement of the now abandoned New Theater. That institution ceased to struggle against public indifference after its second season. Now that it has been renamed the Century, the production of "The Garden of Allah," there carries on the best spectacular standards of the institution, although it is doubtful if that theater formerly would have considered the play worthy of its pretensions. The abandonment of this enterprise was a real loss to the American theater.

Only the artistic achievements of Max Reinhardt in such bold experiments as mounting the second part of Goethe's "Faust" has attracted attention to Germany during the past year. There has been nothing of such importance from its principal dramatists during that time as to suggest future fame for it beyond the frontiers of their own country. Nor are such dramas as "Le Vieil Homme," by Georges Porto Riche, which delighted Paris for a brief term, ever likely to find their way to our stage. The graceful banalities of Pierre Wolff as revealed in his first Comédie Française play "The Marionettes," already acted in this country, are more suited to the taste of our audiences. It is true that the French dramatists seem, year after year, more and more limited by the interests and sympathies of their own home audiences. It seems impossible that they should really write with an eye on the market in the United States so rarely do they appeal successfully to its tastes. In Germany it is equally the tendency of the dramatic writers to keep near the hearts of their own people. It may be an inevitable result of this feeling in other countries that American playgoers have come to prefer dramas that deal with their own time and life.

XXXV. LITERATURE AND LANGUAGE

ANCIENT LITERATURE AND PHILOLOGY

ANCIENT LITERATURE

(*Additions from Papyri*)

CLIFFORD H. MOORE

The first three-quarters of the year 1911 have brought greater additions to classical literature than the year 1910. It is true that no single piece is of the interest which the poems of Callimachus possessed; but the total amount of this year's gain is larger and of more varied interest. As often before, we owe a debt of gratitude to the scholarship and energy of Arthur S. Hunt, from whose skilled hand come the two most important volumes of the year: *Catalogue of the Greek Papyri in the John Rylands Library, Manchester* (P. Rylands), and *The Oxyrhynchus Papyri*, vol. viii (P. Oxyr.).

Theological Fragments. — Each volume opens with fragments of theological content, of which the most important are the following: P. Rylands 6, a sixth-century papyrus containing what is apparently quite the oldest extant copy of the Nicene Creed. Although the text does not exactly coincide with any of the other versions known, it offers no very important variants; it closes with a personal confession of faith: "This is my creed, with this language [I shall approach without fear(?)] the terrible judgment seat of the Lord Christ in that dread day when He shall come again in His own glory to judge the quick and the dead and to reign with the saints forever and ever. Amen." Next in interest are 7, a new acrostic Christian hymn; 8 and 9, two liturgical fragments; and 12, a certificate of pagan sacrifice, dating from the Decian persecution. P. Oxyr. 1073 gives us on a vellum leaf of the fourth century parts of Genesis v and vi in the "Old Latin" version preceding Jerome's translation, which are textually important; 1074 and 1075 are two fragments of the Greek version of Exodus xxxi and xl, dating from the third century and therefore older than any known manuscript; 1076 offers a fragment of a new recension of Tobit ii; and 1081 contains an interesting bit of an unknown gnostic gospel.

Classical Texts.—Each volume brings new classical texts. Of these the most important is P. Oxyr. 1082, fragments of *meliambi* by the poet Cercidas. The first fragment preserves portions of two poems. One contains a discussion of the nature of the gods and of divine providence, in which the poet declares that the current beliefs do not square with the facts of life; he will rather leave the fictitious gods to the astrologers, and worship the tried Paean, Giving, and Retribution, that is, beneficence for those afflicted in body or spirit and punishment for wrongdoers. The second poem is erotic, teaching the cheap and easy way of love. Another fragment is apparently biographical, expressing the poet's satisfaction that he has devoted himself to the service of the Muses all his life. The fourth of the larger fragments, which contains a few verses on an uncertain subject, held the final column of the papyrus roll and has the subscription, "The Meliambi of Cercidas the Cynic." Thus we know definitely that Cercidas was a follower of Antisthenes, and from

clear references to Zeno the Stoic and his pupil Sphaerus, we must place the poet in the third century B. C. His verses show him to be a graceful writer of no depth and with little poetic gift.

P. Rylands 13 is a fragment of an epic dealing with the story of Linus and the Argive festival of the Arneïdes. With this should be named P. Oxyr. 1085, a second-century fragment of a poem by the Alexandrine versifier Pancrates, hitherto known to us from Athenaeus, who quotes four "not inelegant" verses, to which this discovery adds some 40 more. Pancrates suggested to the emperor Hadrian that a certain kind of lotus, which he declared had sprung from the blood of a man-eating lion slain by the emperor, should be named from the imperial favorite Antinous. The verses so pleased Hadrian that he gave Pancrates free maintenance in the Museum, a generous reward to judge the whole poem by the swollen and diffuse style of the part we have recovered.

Dramatic Texts.—The only significant gain in dramatic literature consists of 28 fairly complete verses from a satyric play, P. Oxyr. 1083. This probably dates from the fifth century B. C. since the choral element seems large, but in spite of the names of two characters, Oineus and Phoenix, it is impossible to determine the author. P. Rylands 15 is the lament of a girl whose lover has been carried away to become a gladiator; and 17 gives us six lines of an epithalamium which suggests the "Epithalamium of Helen" by Theocritus. No. 23 of the same volume contains a fragmentary epitome of the Odyssey, and 26 is one of the happy surprises, for it is nothing less than a part of Apion's "Homeric Glosses," dating from the first century, and therefore but slightly later than the date of composition. New Homeric *scholia* are given in 1086 and 1087 of the P. Oxyr., both of the first century of our era. The former is important for the history of the Aristarchean tradition, while the latter is non-Aristarchean, and gains additional interest by giving us new quotations from no less than 15 different authors.

According to the London *Times* of Nov. 11, Dr. Hunt has announced the recovery of about 400 verses of the "Ichneutae," "The Trackers," a satyric play by Sophocles. The publication of this fragment will be eagerly awaited by scholars.

History.—In the field of history P. Oxyr. 1084 presents a second-century fragment of the first book of Hellanicus's "Atlantis," and 1089 a third-century fragment of an Alexandrian chronicle, in which is mentioned the prefect L. Avillius Flaccus attacked by Philo.

Homer.—Of the fragments of extant literature Homer naturally claims the lion's share in the Rylands volume; no Homeric passages are given from Oxyrhynchus this year. The most interesting is 53, which represents the extensive remains of a vellum book dating from the third or fourth century. The text contains parts of books xii-xv and xviii-xxiv; the largest portions belong to xiii-xiv and xx-xxiv, in fact the lines for the last three books and a half are continuous, although a hole in the center of each leaf causes considerable gaps. The character of the text is "mixed," showing close agreement with no single manuscript or group, so that after all the chief value of this discovery is that it adds a new example to the oldest vellum books known.

The other Greek authors represented are Hesiod, Bacchylides, Herodotus, Hippocrates, Demosthenes, Isocrates, and Polybius.

Latin papyri are so rare that every scrap is welcome. P. Oxyr. 1097, a leaf from a papyrus book of the fifth century, contains Cicero, *De Imperio Cn. Pompei* §§ 60-65, and *In Verrem* II, 1§§1-4 in a text of some critical value; 1098 offers a few fragments of Vergil, *Aeneid* ii, 16-23, 39-46. 1099 and P. Rylands 61 are of especial interest, the former because it contains a fragmentary Latin-Greek vocabulary of words drawn from the *Aeneid* iv, 659-705, and v, 1-6; the latter is a portion of Cicero, *In Catilinam* II, with a parallel translation in Greek. Both date from the fifth century and were intended for Greeks learning Latin. A few marks of quantity and accents are found on the Latin.

SEMITIC PHILOLOGY AND LITERATURE

MORRIS JASTROW

The Elephantine Papyri.—A long expected publication which has appeared just in time to be noticed in this survey is Prof. Eduard Sachau's edition of the "Aramaische Papyrus and Ostraka" (Leipzig, Hinrichs, 1911), the collection of the important finds made some years ago at Elephantine—the little island opposite Assuan. The documents found in the ruins of houses, all in Aramaic and belonging to the 5th century B. C., throw a remarkable and unexpected light on a Jewish military colony established at Elephantine during the period of Persian supremacy in Egypt which maintained relations with the mother-church in Jerusalem. Among the documents are also fragments of the Aramaic original of the famous Achikar story and parts of the Aramaic translation of the rock inscription of Darius I at Behistun. In all 87 documents are included in this publication, to which an extra volume of facsimiles of the text is attached.

Inscriptions of the Persian Kings.—Belonging to the same period of the Achaemenian dynasty of Persia (c. 545 to 331 B. C.), is Weissbach's edition and translation of the inscriptions of the Persian Kings (*Die Keilinschriften der Achaemeniden*, Leipzig, Hinrichs, 1911). With the exceptions of the two inscriptions of Cyrus, which are in Babylonian, all the other documents are couched in the three official languages of the Persian Kingdom—old Persian, Babylonian and Neo-Elamitic. Prof. Weissbach furnishes a transliteration of all three languages with translations and explanatory notes.

Aramaic.—A useful compilation of the entire material bearing on the position of the Aramæan groups in the history of the ancient Orient and of the prominent position acquired by Aramaic from the 8th Century B. C. throughout Palestine, and Syria up to the district of the Euphrates and Tigris and extending well into Arabia, is represented by Sina Schiffer's "Die Aramäer" (Leipzig, Hinrichs, 1911). That an Aramaic dialect became the common speech even in Babylonia during the two centuries preceding the coming of the Persians is one of the surprising results of recent researches that is being confirmed by steadily increasing material.

Assyriology.—Within the field of Assyriology, the most significant publication of the past year is in the subdivision of archæology. Following up Andrae's valuable treatment of the Anu-Adad Temple excavated by the German expedition at Ashur, the ancient capital of Assyria, Dr. Robert Koldewey, the director of the German excavations at Babylon, has summed up in a splendidly illustrated volume with detailed charts and drawings, the results of the investigations of the temples of Babylon and Borsippa, so far as recovered. (*Die Tempel von Babylon und Borsippa*, Leipzig, Hinrich, 1911). Thanks to this work, we now have a definite view of the interior arrangement of Babylonian sanctuaries.

Sumerian.—The publication of a Sumerian grammar by Stephen Langdon (Paris, Geuthner, 1911), may be taken as an indication of the advance made in our knowledge of the language spoken by the old Sumerian settlers in the Euphrates valley. At the same time Langdon's work shows how much is still doubtful and how defective our knowledge is at many points. Francois Thureau-Dangin, of Paris, now the leading authority on Sumerian has acquired fresh laurels by his *Lettres et Contrats de l'Epoque de la Première Dynastie Babylonienne* (Paris, Geuthner, 1910) —an important collection of documents, containing also two cuneiform tablets from a district Khana of which hitherto little was known.

Another new center from which numerous tablets have recently turned up is Drehem, 3 miles to the south of Nippur. It is to the same indefatigable Thureau-Dangin that we owe the first publication of Sumerian documents from this place. Two larger publications of Drehem tablets are just off the press, one by H. de Genouillac of the collection in Constantinople and in the Louvre, another of Stephen Langdon of those

that have been acquired by the Bodleian Library and the Ashmolean Museum of Oxford.

Babylonian.—The activity of the British Museum is represented by three parts of the "Cuneiform Texts" series (Parts 27 to 29), two of which are taken up chiefly with "Birth-Omens" which for the first time enable us to obtain a detailed view of the system perfected by the Babylonian priests in interpreting unusual phenomena—chiefly malformations—observed in new-born infants and in the young of animals. L. W. King has published the first of three volumes of his *History of Babylonia and Assyria* (London, Chatto and Windus, 1910), which comprising a complete treatment of the entire material by a master of the subject will undoubtedly take rank as the standard work on the subject in English. Of works by American scholars, mention should be made of the appearance of two more volumes of the *Assyrian and Babylonian Letters* of the British Museum by Prof. R. F. Harper of the University of Chicago (London, Luzac & Co., 1911). This series of eleven volumes forms a *corpus* of the epistolary literature of Assyria and Babylonia, of equal importance for the light thrown by these letters on historical events, on social conditions and on religious practices. Prof. Jastrow's *Aspects of Religious Belief and Practice in Babylonia and Assyria* (New York, Putnams, 1911) aims to give in a popular form a summary of the main facts of the Babylonian-Assyrian religion, as disclosed by recent researches.

Arabic.—In Arabic literature, the most notable publication is Ignaz Goldziber's *Vorlesungen über den Islam* (Heidelberg, Winter, 1911), which as a treatment of the subject by the greatest living authority ought to appear in an English garb also. The great *Encyclopaedia of Islam* appearing in parts in three languages (English, French and German) is making slow progress, the work extending at present only to BAD. The projectors appear to be in lack of funds to carry on this expensive but highly important undertaking; and it would be a serious loss to science if the *Encyclopaedia* should have to be abandoned for this reason.

Hebrew.—The excavations conducted for a number of years under the auspices of Harvard University through the generosity of Jacob H. Schiff have at last yielded important results. A palace was uncovered which is in all probability the one erected or enlarged by Ahab the King of Israel (9th century B. C.) and numerous ostraka containing important lists of Hebrew proper names have been found. A preliminary account has been furnished by Prof. D. G. Lyon "Hebrew Ostraka from Samaria" (*Harvard Theological Review*, vol. III, pp. 136-146), and an elaborate publication on the excavations is announced as in preparation.

Preliminary reports of important excavations in "underground Jerusalem" conducted by English explorers are being published by Prof. H. Vincent in the *Revue Biblique* (Vol. 8, Nos. 4 and 5). In the "International Series" of commentaries on the Old and New Testament, the volume on Genesis by Prof. H. S. Skinner has appeared (New York, Scribners, 1911), which is by far the best work on the subject that has as yet appeared in English. The treatment is full and explicit and embodies the latest results of critical study of the various documents comprised in Genesis.

INDO-GERMANIC PHILOLOGY

(*Exclusive of the Germanic Languages.*)

ROLAND G. KENT

The activity of American scholars in this field is such that our entire space is this year devoted to their work.[1]

[1]The following abbreviations are used: *AJA., American Journal of Archaeology; AJP., American Journal of Philology; CP., Classical Philology; CQ., Classical Quarterly; IF., Indogermanische Forschungen; JAOS., Journal of the American Oriental Society; KZ., Zeitschrift für vergleichende Sprachforschung, begründet von A. Kuhn; PAPA., Proceedings of the American Philological Association; PAPS., Proceedings of the American Philosophical Society; TAPA., Transactions of the American Philological Association.*

Indo-Iranian (see also under "Suffixes and Etymologies").—L. C. Barrett (Trinity) has issued the first edition of Book II of *The Kashmirian Atharva Veda* (*JAOS.*, 30, 187-258), continuing Book I (in *JAOS.*, 26), from a single badly written manuscript, continuing many hymns not known in other versions of the Atharva Veda.

G. M. Bolling (Catholic Univ.) and J. von Negelein (Königsberg, Germany) have completed vol. 1 of *The Pariśiṣṭas of the Atharvaveda* (Leipzig, Harrassowitz; part 1, 1909; parts 2 and 3, 1910), giving a text, critical apparatus and indices to this hitherto unpublished work.

G. P. Quackenbos (Col. City of N. Y.) gives the text of *The Mayūrāṣṭaka*, an unedited Sanskrit poem by Mayūra, with translation and notes, in *JAOS.*, 31, 343-354.

M. Bloomfield (Johns Hopkins), "Some Rig-Veda Repetitions" (*JAOS.*, 31, 49-69; cf. last year); E. W. Hopkins (Yale); "Mythological Aspects of Trees and Mountains in the Great Epic" (*JAOS.*, 30, 347--374), "Magic Observances in the Hindu Epic" (*PAPS.*, 49, 29-40), "Buddha as Tathāgata" (*AJP.*, 32, 205-209); A. V. W. Jackson (Columbia), "The possible Contribution of Oriental Thought to present-day Christianity" (*The 27th Church Congress in the U. S.*, 96-105), "Brahmanism" (Randall and Smith's *Unity of Religion*, 29-37); S. G. Oliphant (Olivet), "Fragments of a lost Myth-Indra and the Ants" (*PAPA.*, 41, lv-lix); E. A. Welden, "The Sāṅkhya term Liṅga" (*AJP*, 31, 445-459).

L. Bloomfield (Illinois), in "The Indo-European Palatals in Sanskrit" (*AJP.*, 32, 36-57) presents the theory that Indic spirantized the palatals less soon that did Iranian. F. Edgerton (Johns Hopkins) presents "A Modern Development of the Elliptic Dual" (*KZ.*, 44, 23-25) in Romance dialects, continuing his previous studies (see last year). Oliphant on "The Vedic Dual" (*JAOS.*, 30, 155-185) shows that the dual of words denoting bodily parts is quite rigidly limited in use.

T. Michelson (Smithsonian) continues his researches in the inscriptions of Asoka (*TAPA.*, 40, 23-29; *IF.*, 28, 203-4, 29, 221-6; *JAOS.*, 31, 223-250).

A. V. W. Jackson has just issued another volume of his travels and studies, entitled *From Constantinople to the Home of Omar Khayyam* (New York, Macmillan, 1911).

L. H. Gray (Columbia) gives the text of *The Parsī-Persian Burj-Nāmah, or Book of Omens from the Moon* (*JAOS.*, 30, 336-342), with introduction and translation.

Lydian.—(See XXXIV, *Epigraphy.*)

Suffixes and Etymologies.—H. H. Bender (Princeton) has treated from the phonetic standpoint *The Suffixes -mant and -vant in Sanskrit and Avestan* (Baltimore, 1910), and W. Petersen (Bethany Col., Lindsborg, Kas.), has given a semantic treatment of *The Greek Diminutives in -ιον* (Weimar, 1910); both are exhaustive and scholarly (see review by Edgerton, *AJP.*, 32, 91-97). Edgerton has issued a splendid treatment, both phonetic and semantic, of *The K-Suffixes in the Veda and Avesta* (Leipzig, 1911, reprinted from *JAOS.*, 31, 93-150, 296-342; cf. also *PAPA.*, 40, xxviii f.), and promises to continue his study of this suffix through the later Sanskrit literature. C. W. Peppler (Emory Col., Oxford, Ga.), in "The Termination *-κός*, as used by Aristophanes for Comic Effect" (*AJP.*, 31, 428-444) shows that this suffix was used by him mainly to ridicule the philosophers and sophists for excessive use of words with this suffix.

E. H. Sturtevant (Barnard) continues his "Studies in Greek Noun Formation: Labial Terminations" (*CP.*, 6, 197-215, 450-476; see last year).

E. W. Fay (Texas) has recently been seeking (*CP.*, 6, 315-324; *AJP.*, 31, 404-427) to find the meaning of suffixes as separate words—a line of investigation that seems fruitful, though it will always remain highly conjectural.

Etymologies are treated by Fay in *CQ.*, 5, 119-122 (*βασιλεύς*), *TAPA.*, 41, 25-53, *JAOS.*, 31, 403-413; and in the articles just mentioned; by H. C. Tolman in *PAPA.*, 41, lxx f.; and by R. G. Kent (Pennsylvania) in *TAPA.*, 41, 5-9 (*mīles*), *JAOS.*, 31, 359-364.

Greek and Latin (see also under "Suffixes and Etymologies" and "Etruscan," etc.)—H. Collitz (Johns Hopkins) as general editor of the *Sammlung der griechischen Dialektinschriften* has issued vol. IV, part 3 (Göttingen, Vandenhoeck, 1910), by O. Hoffmann (Breslau, Germany), containing grammar and index to the first half of vol. III.

A. R. Anderson (Northwestern), in "Some Questions of Plautine Pronunciation" (*TAPA.*, 40, 99-107), shows that *ŏ* in older Latin after *u* and *v* was merely graphic for *u*, to avoid writing *VV*, which was ambiguous.

Miss F. M. Bennett (Columbia), "The Duenos Inscription" (*PAPA.*, 41, xxi-xxiv); R. W. Husband (Dartmouth), "The Diphthong *-ui* in Latin" (*TAPA.*, 41, 19-23); W. A. Merrill (California), "On the contracted Genitive in *i* in Latin" (*Univ. of Cal. Publ. in Class. Phil.*, 2, 57-79).

Etruscan, etc.—(See also XXXIV, *Epigraphy.*)

H. C. Tolman (Vanderbilt) proposes an Indo-Germanic etymology for "The Etruscan *aisar, ais, αἰσοί*" (*PAPA.*, 40, lxxxviii f.).

Husband, in "Race Mixture in Early Rome" (*TAPA.*, 40, 63-81) shows that the language of the so-called Ligurian inscriptions is partly Keltic and partly non-Indo-Germanic, thus proving the Ligurians not Indo-Germanic in language. In *CP.*, 6, 385-401, he discusses the Gallic migrations into Italy.

T. S. Denison, in *The Morphology of the Mexican Verb* (Chicago, 1910), seeks, as in previous publications, to prove the Mexican Indian language Indo-Germanic; but no value can be attached to his theories (cf. Fay's review, *AJP.*, 31, 241 f., of an earlier pamphlet).

GREEK LITERATURE

PAUL SHOREY

There is as yet no occasion for adding anything to the general introduction prefixed to the first of these reports, that for the year 1910. A brief selected bibliography will sufficiently indicate the character of the work done by American Greek scholars during the past year.

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LATIN LITERATURE

CHARLES KNAPP

American work in Latin literature still consists mainly of articles in *The American Journal of Philology* (*A. J. P.*), *Classical Philology* (*C. P.*), the *Transactions of the American Philological Association* (*T. A. P. A.*), and in the volumes of studies published under the auspices of various universities. One book, E. G. Sihler's *Annals of Caesar*, a critical biography, comes within our field.

In *T. A. P. A.* for 1909, published in 1910, under the title "On Certain Euphonic Embellishments of Propertius," B. O. Foster treats rhyme, vowel repeated, alliteration, syllable repeated, word repeated or echoed, onomatopœia. On Propertius, again, see B. L. Ullman, "The Manuscripts of Propertius" (*C. P.*), and A. L. Wheeler's work on "Roman Elegy" (see below). In *T. A. P. A.*, in "Lucilius and Persius," G. C. Fiske make Lucilius a source for Persius second in importance only to Horace. For a certain tendency of American scholarship see W. P. Mustard, in *T. A. P. A.*, "On the [Latin] Eclogues of Baptista Mantuanus," a writer of the 15th century who knew Vergil well; the same writer's edition of Mantuanus's *Eclogues;* two papers in abstract in the *Proceedings*, bound with *T. A. P. A.*, one by K. P. Harrington, "The Classical Element in 16th Century Latin Lyrics," the other by C. C. Bushnell, "Some New Material dealing with the Classical Influence on Tennyson." In the *Proceedings*, again, C. Knapp, in "The Dramatic Satura among the Romans," defends the Roman tradition concerning the dramatic satura, and promises to give to the subject the exhaustive treatment demanded by its great importance to the student of Latin literature. The abstract in the *Proceedings* of the presidential address of Prof. B. L. Gildersleeve on the "Range and Character of the Philological Activity of America" deserves mention; it is well reinforced by the article of P. Shorey, on "American Scholarship," in *The Nation* for May 11, 1911.

In *C. P.*, G. L. Hendrickson, in a paper entitled "Satura—the Genesis of a Literary Form," urges that, down to 40-30 B. C., the Latin word *satura* was either not in existence at all or at least not in common use as a designation of a form of literature, for the reason that, though Roman satire began with Lucilius, a long time elapsed before it claimed a place as a recognized and independent form of literature needing a specific name.

Other papers making contributions in detail to the study and understanding of Latin literature are: "A Bibliography of Persius," by M. H. Morgan; "The Rhythmical Clausulae in Ammianus Marcellinus," by A. M. Harmon, in *Transactions of the Connecticut Academy of Arts and Sciences*, XVI; "Vahlen's Ennius," by C. Knapp (*A. J. P.*), an elaborate examination of parts of the second edition of Vahlen's great book on Ennius; "The Origin of the Realistic Romance among the Romans," by F. F. Abbott (*C. P.*), an argument that the realistic romance was the invention of Petronius; "Concerning the Oratory of Brutus," by E. J. Philbey (*C. P.*), an argument that in his *Brutus* Cicero does not correctly represent either Brutus's views on oratory or his oratorical style; "The House-Door in Greek and Roman Religion," by M. B. Ogle (*A. J. P.*), an effort to show that the cult connected with the door (*e.g.*, binding the doorposts with wool, fastening on or near the door laurel, cypress, etc.), was concerned originally with the spirits of the dead; "Roman Prayer in its Relation to Ethics," by G. J. Laing (*C. P.*); "The Introduction of Masks on the Roman Stage," by Miss C. Saunders (*A. J. P.*), a good summary and examination of the available evidence and the views based upon it, reinforcing the view that the

introduction was between 130 and 91 B. C.; "Erotic Teaching in Roman Elegy" (Part II), by A. L. Wheeler (*C. P.*), which urges that the erotic system of teaching was already highly developed in the New Comedy of Athens and that the Roman elegists drew directly on that comedy; "The Identity of the Child in Virgil's *Pollio* (Eclogue IV), by J. E. Church, Jr., (*C. P.*); "The Convention of the Pastoral Elegy," by G. Norlin (*A. J. P.*), which illustrates the influence of the classics on modern pastoral poetry by pointing out conventions which recur in pastoral poetry from classical times to our own day. This tendency, rather common in America, to trace the influence of the classics on modern literature, especially English, is seen in the second edition of an excellent book, *The Classic Myths in English Literature and Art*, by C. M. Gayley. (See also Prof. Bushnell's paper, referred to above.)

One book not directly concerned with literature proper but sure to prove indispensable to the earnest interpreter of early Latin literature is *Syntax of Early Latin;* Vol. I: *The Verb*, by C. E. Bennett (see reviews of it in *C. P.* by W. G. Hale, in *A. J. P.* by C. Knapp, in *The Classical Weekly*, by A. L. Wheeler).

Most important aid to the study of literature is supplied by adequate lexicons and *indices verborum*. The two important Latin lexicons on which American scholars are engaged, the *Thesaurus Linguae Latinae Epigraphicae*, by G. N. Olcott, and *Lexicon Plautinum*, by G. Lodge (both professors in Columbia University) made progress; of the former 408 pages (into *ara*), of the latter 576 (into *fabula*) have now appeared. Most important for every student of Vergil is M. N. Wetmore's *Index Verborum Vergilianus*, of 554 pages (Yale University Press). An excellent idea of its value may be gained from the review of it by E. K. Rand (*C. P.*). The mention of this paper reminds one of Prof. Rand's "Horatian Urbanity in Hesiod" (*A. J. P.*), and, finally, of the fact that much excellent work in classical literature and philology is done by American scholars in reviews, especially in *A. J. P.* and *C. P.*

METHODS OF INSTRUCTION IN LATIN AND GREEK

GONZALEZ LODGE

College Entrance Requirements.—The Chairman of the Commission on College Entrance Requirements, Prof. J. C. Kirtland,[1] reports 56 colleges and universities as having adopted the recommendations laid down in the report of Dec., 1909, and it is confidently expected that after the examinations of 1912, the old requirements will disappear from most college announcements. The modifications in the curriculum involved in this change have been thoroughly discussed by Prof. Kirtland,[2] while Prof. G. Lodge[3] has set forth the value of the oral method in this connection, and Prof. F. P. Moulton[4] has discussed the methods of training in sight translation. Pres. E. D. M. Gray[5] goes so far as to urge that Latin be taught as a modern language.

Oral Teaching.—The rapid spread of the oral method in Great Britain and the interest which it is arousing among classical teachers is evidenced by the fact that a summer school of Latin, devoted primarily to the exemplification of this method, was held at the University of North Wales during the early part of September. At this school more than a hundred teachers were in attendance and the greatest enthusiasm was manifested. Several new English text-books setting forth this method have been published recently and the two most recent American elementary books likewise provide extensively for this kind of exercise.

Value of Classical Training.—The various *Symposia* of the Michigan Classical Conference have been issued in a single volume[6] which constitutes the strongest, and at the same time the most representative, discussion of the claims of classical study to the earnest consideration of every cultivated man. Particularly important in this book are the discussions in regard to the value of classical training from the point of view of formal discipline and in preparation for the different learned professions. The same points are

emphasized in different ways in articles by Prof. F. J. Donnelly,[7] Miss G. H. Goodale,[8] Prof. J. K. Lord,[9] and Prof. Paul Shorey.[10] Statistics of honor men among Dartmouth College students have been prepared by Prof. C. D. Adams,[11] which show that the proportion of classical students who have obtained honors in science is very much greater than that of the distinctly science students, 54 per cent. to 20 per cent. Similar statements showing the same facts have been prepared by Prof. J. W. Hewitt[12] with regard to students in Wesleyan University.

Training of Teachers.—The differences in the training of classical teachers in Germany and in the United States is the subject of an able article by Prof. Julius Sachs.[13] He shows that the fine quality and results of classical teaching in Germany are due to the large amount of knowledge and skill required of German students who expect to be teachers of the classics as well as to the fact that in Germany teaching in the schools is regarded as a life work by those who adopt it.

Prose composition is discussed by A. L. Hodges,[14] who maintains that undue emphasis should not be laid upon this branch of instruction and that the cultural element should not be lost sight of.

Suggestions for stimulating the interest of students are provided in articles by Miss C. J. Allinson,[15] Prof. F. S. Dunn[16] and Prof. F. B. Meyer,[17] while the enthusiasm of students themselves is shown in the prevalence of Greek plays,[18] which continue to be given in a number of universities each year, and other representations of ancient life.

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5. *Latin in the Secondary School.* (Albuquerque, Dec., 1910.)
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7. "The Profit and Loss of Greek." (*America*, April 22, 1911: reprinted in *Classical Weekly*, IV, 220-221.)
8. "The Classics and the Country Boy or Girl." (*Classical Weekly*, IV, 122-127.)
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10. "American Scholarship." (*Nation*, May 11, 1911.)
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MODERN LANGUAGES AND LITERATURE

GERMANIC LANGUAGES

DANIEL B. SHUMWAY

Interest in German and Scandinavian Literature.—Without doubt the most characteristic and significant feature of the year in the department of Germanic languages is the growing interest of the American public in German and Scandinavian literature. This is evidenced not only by the many translations that have appeared, but still more so by the fact that a systematic effort is now being made to translate all the more important modern German authors into English. This monumental undertaking will consist of a series of 20 large volumes of over 500 pages each, under the title: *The German Classics*

of the XIX and XX Centuries. In the Scandinavian field, the growing interest has resulted in the forming of an Association for Scandinavian Studies in Chicago. A Committee on Translations was appointed to encourage the translation of Scandinavian works. A brief sketch of the history of Scandinavian study in American universities, from the pen of George T. Flom, appears in the *Transactions* of the meeting, and articles on the Association appeared in the *Dial* of July 1 and in the *Nation* of June 8.

German Translations. — Turning now to modern German literature we find that the following novels and dramas have appeared in translation this year. Gerhart Hauptmann is represented by translations of *The Weavers,* his powerful social drama of the 40's, by Mary Morrison; by his first social drama *Before Dawn,* by Leonard Bloomfield; further by a new translation of his fairy drama *The Sunken Bell,* by one of the *Assumption of Hannele,* of *And Pippa Dances* and of *The Reconciliation.* Hauptmann's latest novel, *Emanuel Quint, der Narr in Christo,* a weird but masterful tale of a weak-minded peasant who is led to believe himself to be a reincarnation of Christ, is well described in *Current Literature,* L. 172-3, under the title of "Hauptmann's Silesian Messiad." Hauptmann's treatment of blank verse is also the subject of a N. Y. Univ. dissertation by C. A. Kraus. Hermann Sudermann is represented by translations of his Biblical drama *Johannes,* of *St. John's Eve,* and of his allegorical play *The Three Heron Feathers.* Friedrich Hebbel, who in recent years has received the recognition long denied him, is represented by the translation of his well known plays *Agnes Bernauer* and *Judith.* Adolf Wilbrandt's masterpiece *The Master of Palmyra* has also appeared in English. Arthur Schnitzler, the Austrian playwright, has been honored by translations of *The Duke and the Actress, The Lady with the Dagger, The Legacy, Living Houses* and *Anatol,* a sequence of dialogues paraphrased for the English stage. All but the last of the above named plays are reprints of the translations which appeared from time to time in *Poet Lore.* A poetic translation of Wagner's *Dusk of the Gods* (*Götterdämmerung*) has appeared from the skilful pen of Oliver Huckel. Wagner's *Autobiography,* which created such a stir in Germany because of its more than candid tone, has likewise been issued in English by Dodd, Mead & Co. A. Julien has also published a study of Wagner's life and works. Frank Wedekind's powerful but repulsive tragedy of childhood, *The Awakening of Spring,* has been done into English by Francis J. Ziegler, who has also rendered several stories by the same author, *The Grisly Suitor, Rabbi Ezra* and *The Victim.* An historical drama by Friedrich Eberweiler entitled *Three Holy Kings* has been translated by a member of the Society of Jesus. A few excerpts of Schönherr's masterly tragedy *Faith and Fireside* (*Glaube und Heimat*), which has been the sensation of the year in Germany, have appeared in *Current Literature* for Sept. It is also reviewed by Kuno Francke in the *Nation* of June 15. Modern German drama is treated by P. Pollard in his book *Masks and Minstrels of New Germany,* and W. R. Meyer has discussed the "Technique of Bridging Gaps in the Action of the German Drama Since Gottsched" in *Modern Philology,* VIII, 217-268 and 363-398.

But two German novels have been translated this year. One, the latest work of Gustav Frenssen, bears the title *Klaus Hinrich Baas.* It is the story of the rise of a self-made man in Hamburg, told with all the gripping interest and fidelity to nature so characteristic of Frenssen. Frenssen's literary work is the subject of an appreciative article in the April number of the *Bookman.* The other novel is *Elizabeth Kött* by R. H. Bartsch, which has been translated by Ludwig Lewisohn. One fails to discover the reason for the translation of this rather weak production. No translation, but an estimate of the work of the novelist Spielhagen, who passed away in February, appeared in the *Nation* of March 9 and in the *Review of Reviews* for May. *Tannhäuser,* one of the light but popular verse romances by Julius Wolff,

has been rendered into English by C. G. Kendall, and the poet Heine's *Memoirs*, edited by Gustav Karpeles, have been translated by Gilbert Cannan. The interest in Goethe's *Faust* is shown by the issuing of an inexpensive edition of Bayard Taylor's translation in the "Riverside Literature Series," while an expensive edition with 30 full-page colored plates has been prepared by Willy Pogany. The interest in Goethe is further shown by a volume on *Margaret Fuller and Goethe*, containing a sketch of the poet's influence on the transcendentalists; further by a sketch of *Frau Aja, Goethe's Mother*, from the pen of M. Reeks. The great cultural influence of the German immigrants on American civilization is discussed by Rudolf Cronau in an article entitled "The German Element in the United States" in the *Forum* of Sept., and an article "Some German Pioneers" in the *Review of Reviews* of Sept. reviews a similar essay by the same author in the *Gartenlaube*.

German Texts.—The editing of German texts for school use shows apparently no diminution, and only the most important can be mentioned here. Otto Manthey-Zorn has prepared a new edition of Fulda's *Talisman* for Ginn & Co., making the third edition of this play. Camillo von Klenze has made an edition of Hebbel's *Agnes Bernauer* for the Oxford University Press, and issued a new edition of his excellent little volume *Deutsche Gedichte*. An abridged edition of Sudermann's novel *Frau Sorge* has been prepared by Eugene Leser and Carl Osthaus for Heath & Co., and B. J. Vos has edited a new edition of *Wilhelm Tell* for Ginn & Co. The rustic love episode of Scheffel's historical novel *Ekkehard* has been edited, under the title of *Audifax und Hadumoth*, by C. H. Handschin and W. F. Luebke for the American Book Co. An admirable book for students desiring to acquire the vocabulary of economic German is John A. Bole's *Deutsche Wirtschaft*, comprising selections from Loening's *Grundzüge der Verfassung des Deutschen Reiches*, and from Arndt's essay *Deutschlands Stellung in der Weltwirtschaft*. A new departure is also represented by L. Lewisohn's text book on *German Style*, edited for Holt & Co. It consists of selections from the masters of German prose, with excellent analyses and critical notes, and will be found to be of great help in the study of German style.

German Teaching.—The department of the study and teaching of German is represented by the following excellent articles: M. M. Skinner, "Aspects of German Teaching in America" (*Educational Review*, Jan.); S. W. Cutting, "Teaching of German in High Schools and Academies" (*School Review*, April); J. A. Bole, "Writing in German" (*Trans. of Educ. Assn.*, 1910, pp. 529-533); F. Monteser, "Direct Method of Teaching Modern Languages and the Present Conditions in our Schools" (*ibid*, pp. 523-9).

German Philology.—Taking up now the older periods of German, mention should be made of a series of excellent articles on Luther and his work, by A. C. McGiffert, which have been appearing in the *Century Magazine* since Dec., 1910. W. M. Hart, in the July number of *Modern Philology*, discusses the striking similarity of Hans Sachs's *Fastnachtspiel: der Dot im Stock* and Chaucer's *Pardoner's Tale*. The Middle High German period is represented by short articles on Abraham a Santa Clara, by F. S. Law, in the *Musician* for Aug., and on Walther von der Vogelweide, under the title of "The Poet and the Birds," in the *Outlook* for June 24. A cheaper edition of Shumway's prose translation of the *Nibelungenlied* has appeared in the "Riverside Literature Series." Old High German is represented only by L. Armitage's work *Introduction to the Study of Old High German* (Oxford University Press). In the field of Germanic philology, F. A. Wood has compiled an admirable set of tables entitled *Uebersichtstabellen zu Lautentsprechungen und zur Kasusbildung des Nomens und Adjektivs im Germanischen* (Univ. of Chicago Press), and S. Kroesch has discussed the "Semasiological Development of Words for Perceive, etc., in the Older Germanic Dialects" in *Modern Philology*, VIII, 461-510.

Norwegian.—Turning now to other

Germanic languages we find Norwegian well represented through the continued interest in Ibsen. The following articles concern themselves with him and his works: A. Henderson, "The Evolution of Ibsen's Mind" in his volume *Interpreters of Life;* Edwin Björkman, "The Ibsen Myth" (*Forum*, May); L. W. Smith, "Ibsen, Emerson and Nietzsche—the Individualists" (*Pop. Sc.*, Feb.); "Real Meaning of Ibsen" (*Cur. Lit.*, June); E. F. Curran, "Review of Ibsen's Work" (*Cath. World*, Sept.). E. Dowden in his *Essays Modern and Elizabethan* has also devoted a chapter to Ibsen. Björnson's little two-act play *A Lesson in Marriage* has been translated by Grace I. Colbron. A new reprint of an older translation of Björnson's *Sigurd Slembe*, a powerful story of a tragic episode of Norse history, has been published by W. W. Payne. Arne Norrevang's three-act play *Women and the Fiddlers* has been translated by Herman Sandby; Sir G. W. Dasent has adapted the Norse fairy tales of Asbjörnsen; and Grundtwig's *Fairy Tales from Afar* have been published in a translation by Wessels.

Swedish.—Swedish literature is represented by a translation of Strindberg's greatest play *The Creditor*. Another volume contains three other plays of the same dramatist, *Simoon, Debit and Credit* and *The Outcast;* a third the translation of *The Stronger*. A new translation of Selma Lagerlöf's charming novel *Gösta Berling* has appeared from the pen of Pauline B. Flach. A translation of Ellen Key's work on *Love and Marriage* by Arthur C. Chater serves to acquaint the American public further with her advanced views on this subject. Ernst Rosner's novels *John Herkner* and *Twilight* have been issued by R. G. Badger. "The Scandinavian Element in American Population" is the subject of an article in the *Amer. Hist. Review* for Jan.

Danish.—Neither Danish nor Dutch literature is represented by translations or articles, but under the caption *Denmark and the American Idea*, H. G. Leach writes entertainingly of the kind of American fiction which appeals most to the Danish taste.

ROMANCE LANGUAGES

W. W. Comfort

Necrology.—The last year has been marked by political and social unrest in the Latin countries of Europe. Little of the first importance in literature has appeared in the immediate past. The deaths in Paris during 1911 of Auguste Longnon and of Gaston Raynaud will be regretted by students of French history and literature. In Italy the veteran Prof. Pio Rajna has been honored by an important volume of studies dedicated to him by his European colleagues.

The past months have witnessed a severe loss to Romance scholarship in this country in the death of Prof. John E. Matzke of the Leland Stanford University in 1910, and of Prof. A. Marshall Elliott of the Johns Hopkins University in 1911. The former had long been a productive scholar in Romance philology, whose work was recognized abroad; the latter had inspired a large number of younger men and had helped to put the study of the modern tongues upon a solid basis in this country by founding *Modern Language Notes* and by aiding in the establishment of the Modern Language Association. At the time of Prof. Elliott's death his friends and former pupils had prepared in his honor a collection of studies, which has since appeared in two volumes. A similar collection of studies in memory of Prof. Matzke is contemplated.

American Publications.—Romance scholars in this country are beset by two evils: the temptation to consume their energies in editing texts for class use at the instigation of publishers; and the temptation to throw their researches into print at the earliest opportunity. As a result of the latter temptation, many of our productive scholars publish their work piecemeal, without the form or comeliness necessary to commend it to the general reader. It is to be deplored that our academic writers in the Romance field seem to be thus unconcerned with literary form *per se*. Unlike those of Europe, our Romance scholars seem not

to possess the long breath and the literary sense required to present the results of their study in scrupulous form. Notes, comments, discussions, reviews, abound in our journals; but a stout volume with some literary pretension is a rarity from academic scholars.

Italian Literature.—Another feature of Romance scholarship in this country is its neglect of Italian literature. While Spanish literature is everywhere studied, few advanced students occupy themselves with Italian, and the supply of competent scholars in this field is actually not equal to the demand. America is far behind England in her interest in Italian literature, and it is to be regretted that we have failed to realize that the Italian and Latin literature of the Renaissance, with the divers influences emanating therefrom, offers perhaps the most fruitful field for research in our entire domain.

Present Tendencies.—Speaking more affirmatively of the present trend of Romance studies in this country, we may say that our scholars are concerned rather with literary matters than with pure linguistics or text criticism. Moreover, the literature of the last three centuries receives but scant attention. There are reasons for these two observations: the former is explained by the fact that much of our philological instruction is neither so thorough nor so highly specialized as is the case in Europe, and by the fact that we are ill provided for the study of unpublished texts; the lack of attention paid to more modern literature is due to tendencies at work in our graduate schools.

French Mediæval Literature.—Much is being done both in France and abroad to render the public more familiar with the best literary productions of mediæval France. American scholars are bearing a hand in this important task, while mediævalists everywhere will be gratified by the enterprise of the publishing house of H. Champion et Cie., which has begun to issue a series of popular but scholarly editions of mediæval French texts, formerly inaccessible for class use, under the general direction of M. Mario Roques. It is curious to observe that, in spite of years of discussion, the doctors still disagree upon the two primary problems of mediæval literature, concerning the literary origins of the national epic and of the so-called Breton material. In the discussion of the latter problem, some American scholars have taken an active part.

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ENGLISH LITERATURE

C. G. CHILD

American Scholarship.—In the scientific study of the English language and literature, America continues to emulate, and to strive to combine, virtues which characterize, more or less distinctively, German and American scholarship. Taking both quantity and quality of effective work into account, especially as regards the determination of new truth patient, minute care in matters of detail which often seem trivial, looking forward to a solid and substantial result at some indefinite point in the future—Germany still holds first place. America, however, is now her close rival in quantity of really valuable research, and gives promise of surpassing her in quality because of a wiser direction of energy toward the attainment of results immediately valuable (in the way both of rendering possible further advance and of coördinating results already gained), and also partly because of a general gradual emancipation from too indiscriminating adherence to German methods and ideals. In America as compared with England there is a more widespread activity in scientific research, a zeal to be fully abreast with the latest advances in knowledge, in marked contrast to the insular indifference or prejudice toward work done in other countries characteristic of England, which insures a greater productivity and a higher average quality in the attainment of new truth and its immediate evaluation. But, in literature, in the higher criticism in which sufficiently wide, varied, and accurate knowledge, powers of philosophic insight and analysis, an ideal of hu-

mane culture derived from a life-long liberal training so contrived as to be thorough but not to stifle individuality, are combined with trained taste and a command of expression giving criticism itself a right to be considered literature, America has no one to compare with one or two men in England, and one or two in such a case are worth a multitude of men of lesser gift.

Philology.—A brief survey for the general reader cannot take account of papers treating minute points of scholarship, however useful in their relation, or classroom texts, though perhaps including material of value, but only of general tendencies and of more significant contributions. The past year continued to show the decrease in interest in purely linguistic study, the study of the history of the language, which has characterized the past ten years or more. The teaching of English philology in most universities and colleges consists of little more than the reading of a little Anglo-Saxon and Middle English; and certain universities, which formerly made a specialty of philologic study in their graduate work have turned to the study of literature.

Early English Literature.—With this change is naturally associated a lessening of interest in the study of our earlier literature. In the Old English period (to 1150) there has been no single notable contribution like that of Frederick Tupper's edition of the *Riddles* of 1910. Among the more important publications devoted to this period, we may note the same author's destructive onslaught upon the Cynewulf legend (*Publications of the Modern Language Association*), Moore's examination of the sources of the *Exodus* (*Modern Philology*), the articles by Lawrence and Tupper upon the "*Song of Deor*" (*ib.*), and Kennedy's useful translation of Cynewulf. Klaeber (if we may claim him for America) continues in occasional articles to give earnest of the results of his study of *Beowulf*, pending the publication of his eagerly awaited edition of that poem.

Middle English Literature.—Publications in the general field of Middle English literature (1150-1500) are few. We may note R. H. Griffith's monograph upon the sources of the legend of *Sir Percival of Galles* (University of Chicago), and Miss Keiller's article upon the "Influence of Piers Plowman on the Macro Play of *Mankind*" (*Publications of the Modern Language Association*). American scholarship continues to make almost exclusively its own the field of Chaucerian criticism, especially in the discussion of the vexed questions of chronology, through the work of Miss Hammond, Kittredge, Lowes, Tatlock, Root, Sypherd, C. F. Brown, and W. F. Hart. Reference may here be made to the translation of *Early English Poems* by Pancoast and Spaeth as likely to prove of interest to the general reader, affording as it does a representative anthology of Old English and Middle English verse.

Modern English Literature.—Passing to the Modern period (from 1500), interest continues to center upon the literature of the 16th and 17th centuries, especially the drama. Three helpful papers upon Spenser or connected with him appear in the *Publications of the Modern Language Association*, by Cory ("Spenser, Thomson and Romanticism"), by Greenlaw (*"The Shepherds Calender"*), and by J. B. Fletcher ("A Study in Renaissance Mysticism: Spenser's *'Fowre Hymnes'* "), together with a useful study of French influence upon the beginnings of English classicism by Miss Macintire. To the publications upon Spenser may be added Cory's "The Critics of Edmund Spenser" (University of California Publications). Among works upon the drama, mention may be made of Baskervill's "English Elements in Jonson's Early Comedy," the first volume of Parrott's *Plays and Poems of George Chapman: The Tragedies*, Cunliffe's "The Queenes Majesties Entertainment at Woodstocke" (*Publications of the Modern Language Association*), J. T. Murray's valuable monograph "English Dramatic Companies 1558-1642," G. F. Reynolds's exceedingly helpful article "What we know of the Elizabethan Stage" (*Modern Philology*), Tucker-Brooke's welcome volume, *Tu-*

dor Drama, and Stoll's essay upon the often discussed question of the contemporary intention and conception of the character of Shylock (*Journal of English and Germanic Philology*). Dr. Furness, with the collaboration of his son, continues his variorium edition of Shakespeare, one of the few monumental works of American scholarship. A second edition of Schelling's *Elizabethan Drama*, with revisions and additions, has appeared. Neilson's admirable selection of representative plays under the title *Chief Elizabethan Dramatists excluding Shakespeare* is not merely a class-room text; no better collection is available for the class-room and general reader. Dr. Wallace, whose sensational discovery of a personal deposition signed by Shakespeare, and of new information regarding the site of the Globe Theater, will be remembered, has continued his researches in the Record Office in London. It is rumored that he has made a number of discoveries of note, though not of so striking a nature as those announced.

In the current volume of the *Cambridge History of English Literature*, Springarn contributes the chapter on "Jacobean and Caroline Criticism." In his Harris lectures delivered at Northwestern University, published under the title of "Democracy and Poetry," Gummere links his theories of the communal origin of poetry to an enunciation of the vital and necessary dependence of poetry upon the essential spirit of true democracy. A concordance of Wordsworth, the first publication of the Concordance Society, has been issued under the editorship of Lane Cooper.

N e c r o l o g y.—During the year Francis Andrew March died at the age of 86—a scholar of world-wide eminence in English philology and letters, a pioneer and chief influence in promoting English studies, a great teacher, and a source of inspiration to numberless students of English throughout his long and active life.

AMERICAN LITERATURE

(*Oct. 1, 1910, to Oct. 1, 1911.*)

Arthur Hobson Quinn

In this review it has seemed best to consider only the most notable productions in creative literature, and to mention works of scholarship only when upon American themes.

Fiction.—In *John Sherwood, Ironmaster*, by Dr. S. Weir Mitchell (Century Co.), we have a powerful psychological study of the character of a manufacturer and inventor, whose life has made him blind to the forces of nature and impervious to the usual human interests, and who through a sojourn in the wilder sections of Maine broadens and enriches his character. The minor characters, especially the insane Benedict Norman and the Maine natives, are well drawn, and the final dramatic situation is admirably conceived.

The Iron Woman, by Margaret Deland (Harpers), shows no decline in the powers of character drawing, plot construction and humorous appeal which the wholly satisfying art of the writer has so long represented. The book continues the story of *The Awakening of Helena Richie*, but among the new characters, Elizabeth Ferguson, the heroine, and the "iron woman," Mrs. Maitland, have added two permanent characters to American fiction.

In *Ethan Frome* (Scribners), Edith Wharton has struck into a new field, the delineation of New England character of the middle classes. One of the terrible tragedies that arise in little communities where all effort is paralyzed by lack of means to escape, is here touched with deep sympathy for human suffering, and with Mrs. Wharton's distinguished art.

The Long Roll, by Mary Johnston (Houghton, Mifflin Co.), presents a remarkable picture of the early Civil War in Virginia, and scores a signal success in depicting the character of Stonewall Jackson. The book would be more interesting if the many cam-

paigns had been more completely fused into one picture of war.

The South after the war is the theme of *The Miller of Old Church*, by Ellen Glasgow (Doubleday, Page & Co.). The hero is a type of the class which rose after the war through ability and changing social and economic conditions. The character sketching is admirable, the descriptions of natural scenery rise to a high level, and for a parallel to the humor of the rustic characters, one has to go to Hardy and George Eliot.

In *Kennedy Square* (Scribners), F. Hopkinson Smith has returned to the scene of an earlier novel to treat again the theme of the South before the Civil War, and has given us his usual charming picture of that time, although the plot and character drawing are somewhat disappointing.

In *The Secret Garden*, by Frances Hodgson Burnett (Stokes), we have a study of the effect of nature upon two children. The story is exquisitely told and is not a child's book but a really notable contribution to fiction. The right feeling, the good sense, the undidactic quality of the book make it one of the best things the author has done. The picture of the sunlit garden and the children in it will live long in the memory.

Pandora's Box, by John Ames Mitchell (Stokes), develops the love story of an American architect and the daughter of an English earl. The cleverness of the conversation, the humorous conception of character, the trenchant criticism of both British and American life, and the touch of psychic influence working through heredity combine to make the book a distinct contribution to the international novel.

The Legacy, by Mary S. Watts (Macmillan), is a well told, if somewhat leisurely novel of life in the Middle West during the last three decades. The great interest of the book lies in the character of the heroine, Letty Breen. The way in which her family pride and lack of moral standards, inherited from her father's family, combined with her mother's industry and sense of duty, work out to form a contradictory yet a very human woman, is masterly.

John Winterbourne's Family, by Alice Brown (Houghton, Mifflin Co.), is a study of responsibilities, typified by several interesting characters, painted with the author's usual skill. The humor is at times very effective; at others, too finely drawn.

The Common Law, Robert W. Chambers (Appletons), is a brilliant if highly colored novel of artist's life in New York. If one forgets the improbability of the chief character, the clever, unabashed and at times powerful treatment of the life described is very strong in its appeal.

A rather unusual book is *The Coward of Thermopylae*, by Caroline Dale Snedeker (Doubleday, Page & Co.). It is a romance of Greece at the time of Marathon and Thermopylae. The author has drawn well the distinction between the Athenian character, with its keen intellectual curiosity and its slighter physical development, and the Spartan military sense and more democratic though less spiritual nature.

Of small bulk but containing a charming love story is Harriet Prescott Spofford's novelette, *The Making of a Fortune* (Harpers).

Queed, by Henry Sydnor Harrison (Houghton, Mifflin Co.), is an interesting study of the change in a man's nature through his gradual awakening to the demands of others upon his sympathy. The characters are well done and the picture of life in a Georgia city of the present day is admirable.

Based upon quite a different phase of Georgia life is *Jane Dawson*, by Will N. Harben (Harpers). This is a story of the poorer classes, in the country, of strong loves and hates, told with a stylistic excellence which makes us wish that the novel had been less of a sermon.

Finally, mention must be made of a western story, *Me—Smith*, by Caroline Lockhart (Lippincott), which in its fidelity to the life described is almost photographic.

Several important collections of short stories have appeared. Under the title *Wandering Ghosts*, by F. Marion Crawford (Macmillan), have been collected seven stories of the late novelist, all of which deal with the supernatural. They vary in ex-

cellence, from "The Dead Smile," which is too highly keyed, to "The Upper Berth," which is one of the great short stories of the world, but they are all told with the unfailing charm of the great entertainer.

The Guillotine Club, by Dr. S. Weir Mitchell (Century Co.), contains in the title story, one of the very best of the author's shorter fictions, laid in Paris of the Second Empire, and also several interesting stories with a supernatural basis.

In *Tales of Men and Ghosts* (Scribners), Edith Wharton treats a variety of themes with her usual distinction. Several of the stories reflect a literary atmosphere and have a certain unity in that they deal almost exclusively with men. Two powerful stories of the supernatural complete the volume.

The Finer Grain, by Henry James (Scribners), includes five pieces of fiction, among which the last, "The Bench of Desolation," rises above the rest distinctly, through its human sympathy.

The Empty House, by Elizabeth Stuart Phelps Ward (Houghton Mifflin Co.), is made up of nine of the author's latest stories, in which she did her best work since "The Madonna of the Tubs." All those who believe that America still contains cultivated, respectable people fit for fiction, will like this book.

Members of the Family, by Owen Wister (Macmillan), contains eight stories of Western life, in which some of the characters that he had already developed are met again. Of the stories, the best are the tragic ones, such as "Timberline" or "The Gift Horse," though at times there is also a distinctly successful note of comedy.

In *Later Pratt Portraits*, by Anna Fuller (Putnam), we have eleven portraits of the descendants of "old lady Pratt" made very much alive by delicate characterization, aided by comedy and pathos. Human frailties are touched gently yet artistically in these stories by an art which is content to be judged by those who read completely and with understanding.

A book of short stories containing more promise than actual achievement is *The Sick-a-Bed Lady*, by Eleanor Hallowell Abbott (Century Co.). The author of "Woman's Only Business" has, in all probability, a future.

Poetry and Drama.—In poetry it has not been a very notable year. One of the most important publications is the volume entitled *Poems*, by Madison Cawein (Macmillan). Into this one volume have been condensed by judicious selection the various volumes of Mr. Cawein's verse. Lovers of his poetry will doubtless prefer the larger collected edition in five volumes, but owing to the luxuriance of his poetic ability, the average reader will gain a better idea of his real worth by this selection. The lyric gift, the love of nature and of romance, and the real ability at phrasing which have made Mr. Cawein one of our foremost poets are fully represented in this volume.

In *The Overture and Other Poems*, by Jefferson Butler Fletcher (Macmillan), we have a volume of poems imbued with varied culture from wide reading and containing also interesting experiments in forms such as the sestina. The verse is uniformly well finished and in such a sonnet as "When They Had Slain Their Children to the Idols" a really high note is struck.

At the Silver Gate, by John Vance Cheyney (Stokes), is a volume of rather uneven merit. Such poems as "Presidio" or "Sunset in the Redwoods" are of a high quality. Mention must be made of the illustrations, which are especially charming.

The Immortal Lure, by Cale Young Rice (Doubleday, Page & Co.), contains four plays in verse, of which the general theme is the power of love. The best are "Giorgione," laid in Italy and "The Immortal Lure," laid in India. Mr. Rice has shown an ability in the handling of dramatic blank verse and the situations, if conventional at times, are well established.

Of special interest is the play of *Mona*, the book of the grand opera, by Brian Hooker (Dodd, Mead & Co.) which won the Metropolitan Opera Company prize (see also XXXIV, *Music*). The play is a blank verse tragedy of Britain in the first century A. D. At times it is of remarkable power, and the lyrics are excellent.

Mention should be made also of the collected edition of Henry Van Dyke's *Poems* (Scribners), and of an interesting experiment in the mingling of abstractions and real characters in *The Treason and Death of Benedict Arnold*, John Jay Chapman (Moffat, Yard & Co.).

The most important reprint is *The Complete Poems of Edgar Allan Poe*, by J. H. Whitty (Houghton Mifflin Co.). The several questions raised by the editor as to textual and biographical matters cannot be discussed in this brief mention, but the volume is one of which no student of Poe can afford to be ignorant.

In prose drama, the most significant publication is *Anti-Matrimony*, by Percy Mackaye (Stokes). This is a clever comedy, a satire on free love and other modern devices which are contrasted with the primary instincts of men and women in a normal state of society. The play is a healthy reaction against the overstrained drama produced by the followers of Ibsen, while owing some of its technique to that writer.

A clever farce by W. D. Howells, *Parting Friends* (Harpers), though very slight as to bulk, is full of bright conversation and revelation of human nature.

Essays and Literary Histories.—In *Imaginary Interviews*, by William Dean Howells (Harpers), we find the author in the mellow fruition of his art, looking out in a calm and friendly way on life, American and foreign, criticizing gently and tolerantly, calling to our minds the inconsistencies of our institutions, but leaving us with a respect for that "finer American average which is the best, and rightly seen, the most interesting phase of civilized life yet known." In these essays, reprinted from the "Easy Chair," are also to be found interesting literary criticism, admirable nature description, and, best of all, the attractive attitude of a man who has arrived and who has sympathy for those still struggling.

Among Friends, by Samuel McChord Crothers (Houghton Mifflin Co.), is a delightful series of familiar essays to be read with interest by every lover of human nature and books. Mr. Crothers's calm, sane attitude does not prevent him from indulging in that species of sparkle which is the life of the familiar essay. "The Anglo-American School of Polite Unlearning" will remain a classic and the very titles of some of the other essays, "The Merry Devil of Education," "The Hundred Worst Books" or "In Praise of Politicians" reveal the promise of what is contained in them.

Learning and Other Essays, by John Jay Chapman (Moffat, Yard & Co.), is a notable series of essays, rather philosophic than familiar, though not at all heavy, and imbued with a wit that is at times brilliant. Several of the essays are on educational topics. In these Mr. Chapman says some true and striking things. In general the volume represents well an enlightened conservatism and real literary ability.

Longfellow and Other Essays, by William P. Trent (Crowell), is a collection of essays and addresses, mostly on literary subjects, and usually occasional in their nature. Perhaps the two most significant essays are "The Relations of History and Literature" and "A Talk to Would-be Teachers," though the entire volume is well worth reading.

There have been two important posthumous publications in the field of the essay. *The Journals of Ralph Waldo Emerson*, edited by Edward Waldo Emerson and Waldo Emerson Forbes (Houghton Mifflin Co.), of which two volumes had already appeared, have been augmented by two more volumes which comprehend the years from 1833 to 1838. This revelation of Emerson's inner life and thought is arranged in a sufficiently connected way to interest the general reader, while the professed student of literature will find the volumes a mine of information concerning the development and the limitations of his art.

In *Genius and Other Essays*, by Edmund Clarence Stedman, edited by Laura Stedman and George M. Gould (Moffat, Yard & Co.), have been collected some of the unpublished essays of Stedman, which while seldom rising to the importance of the essays that appeared during his lifetime,

have the note of distinction which always was his. The best are "Genius," "A Belt of Asteroids," "Austin Dobson," and "Keats."

A significant contribution to our literary history is *The Literature of the South*, Montrose J. Moses (Crowell). It is an historical discussion of the literature that has contributed to the sectional development of the South, refreshing in its impartial attitude, and while stronger on its historical than on its critical side, is at times brilliant in its critical appraisement.

Biography.—The *Life and Letters of Edmund Clarence Stedman*, by Laura Stedman and G. M. Gould, 2 vols. (Moffat, Yard & Co.), is not only a thoroughly adequate biography, but also a mine of information concerning our literature since the Civil War. The authors have painted a striking picture of the high heart and indomitable energy of Stedman's character.

Edison, His Life and Inventions, by Frank L. Dyer and Thomas C. Martin (Harpers), is a biography with the qualities of romance. The biographers have arranged their material carefully, with an eye to dramatic situations, and have told their story in a style admirably suited to the general reader who knows little of the technical details of such work as Edison's, and the result is more than a mere narrative. It is a notable contribution to the history of American progress.

Grover Cleveland, by Richard Watson Gilder (Century Co.), is a vitally important picture of the life of Cleveland written by one who knew him intimately. We see the ex-President in his unguarded moments, and we learn to know the great honesty, the unflagging industry of the man. A charming picture is also drawn of the home life of Cleveland and his family, all told with Mr. Gilder's unfailing charm of style.

The Life of Harriet Beecher Stowe, by Charles E. Stowe and Lyman B. Stowe (Houghton Mifflin & Co.), is an intimate personal account of Mrs. Stowe. It is told with a sympathetic understanding of her character and reveals many interesting details of her career.

Another valuable biography is *The Life of Bret Harte*, by Henry C. Merwin (Houghton Mifflin Co.). This is an authentic, well written treatment, which supersedes the English life by Pemberton, whose dates are shown to be at times incorrect. Noteworthy are the chapters on pioneer life in California. It bids fair to be the definitive and authoritative life of Bret Harte.

Three new contributions to the excellent series of American Crisis Biographies, edited by Ellis P. Oberholtzer (Jacobs) are *William H. Seward*, by Edward Everett Hale, Jr., a scholarly book in which the author has gone to original sources for his material; *William Lloyd Garrison*, by Lindsay Swift, written in an easy, fluent style and with great sympathy; and *Stephen A. Douglas*, by Henry P. Willis, an interesting if almost too obviously judicial a picture of the "Little Giant."

Travel.—*The Obvious Orient*, by Albert Bushnell Hart (Appleton), is an admirable description of Japan, China, the Philippines, India, Ceylon, and Egypt, together with an introductory description of the western portion of the United States. The last chapter, summing up the results of the author's observations in his Oriental travels, is especially valuable. The style is clear, pictorial, and flexible.

The North Pole, by Robert Peary (Stokes), is a straightforward book, written in appropriately clear style, without any attempt at heroics and convincing to any unprejudiced mind. It will take its place as one of the permanently important records of human progress.

Over the Border, by William Winter (Moffat, Yard & Co.), is a sympathetic study of Scottish life, scenery and historical associations, and shows Mr. Winter on one of his best sides, the description, in prose, by a poet of a land that he loves. The book is a chronicle of moods of inspiration and will appeal to any one who knows Scotland.

Nature Books.—A book that will be of great interest and appeal to all lovers of nature is *The Lure of the Garden*, by Hildegarde Hawthorne (Century Co.).

SIMPLIFIED SPELLING

CHARLES P. G. SCOTT *

The movement for the regulation and simplification of English spelling made considerable progress in the year 1911. The Simplified Spelling Board continued its activities with increast means and a larger following. Many thousand additional signatures have been obtaind to the card by which the signer agrees "to use, as far as may be practicable, in his personal correspondence, the simpler spellings that have been recommended by the Simplified Spelling Board." The movement has been especially activ in the Normal Schools of the Middle West. The circulars of the Board have been distributed widely among the faculties and students of these schools, as well as of colleges and universities. There has been an increase of interest in simplified spelling in Canada also. Teachers' conventions in Ontario, Alberta, and Saskatchewan have discust the movement, and past resolutions in its favor.

The Imperial Education Conference, held in London, in April and May, 1911, past a resolution in favor of the simplification of English spelling. The conference resolvd "that the simplification of English spelling is a matter of urgent importance in all parts of the Empire, calling for such practical steps in every country as may appear most conducive to the ultimate attainment of the end in view—the creation, in connection with the subject, of an enlightened public opinion and the direction of it to the maintenance, in its purity and simplicity among all English-speaking peoples, of the common English tongue."

Another notable event was the conference held in London at University College, Sept. 4—12, 1911, between delegates of the Simplified Spelling Board and of the Simplified Spelling Society. The delegates on the part of the Simplified Spelling Board were Prof. Calvin Thomas, of Columbia University; Prof. James W. Bright, of Johns Hopkins University; Prof. Charles H. Grandgent, of Harvard University; Prof. George Hempl, of Leland Stanford University, and Prof. Brander Matthews, of Columbia University. The delegates on the part of the Simplified Spelling Society of Great Britain were Dr. E. R. Edwards, Prof. H. Stanley Jevons, of the University of South Wales; Prof. Daniel Jones; Prof. George Gilbert Murray, of Oxford University, and Prof. Walter Rippmann, of Queen's College. William Archer, Secretary of the Simplified Spelling Society, acted as secretary of the conference.

The conference did not, of course, end the long debate as to plans for the simplification of English spelling. The British delegates, agreeing in the main with the recommendations of the Simplified Spelling Board, so far as they have been publisht, desired to go much farther, and proposed an advanced scheme of simplification. The American delegates, believing that it would be inexpedient to adopt now a scheme including many disputable notations, thought it better to postpone the disputable parts of the scheme until the public is better prepared to accept the changes they will require. In the light of the conference, the British Society is revising its scheme. It proposes to put the matter to the test by extensiv experiment, on lines beyond the point thus far reacht by the Board.

During the year seven new members have been added to the Board. But the Board has sufferd the loss of two distinguisht members—Col. Thomas Wentworth Higginson, who died May 9, 1911, and Prof. Francis Andrew March, the eminent filologist, who died Sept. 9, 1911. Prof. March was the leader among the scholars who more than 30 years ago gave their attention to the promotion of

* At the request of the author, who is secretary of the Simplified Spelling Board, this article is printed in accordance with Board's official recommendations.

the movement for the regulation and simplification of English spelling. It was at his instigation that the American Philological Association appointed a standing committee which made an investigation of the matter, approved the change, and recommended definit steps for bringing it about. The establishment of the Simplified Spelling Board, provided with money for the work, was the ultimate result of these efforts.

Two members of the Advisory Council have died during the year, and seven new members have been elected. The Council now consists of 220 members. The Board continues to provide literature and information free, on application to its address, No. 1 Madison Avenue, New York.

COPYRIGHT

WILLIAM W. APPLETON

United States.—A proclamation by the President of the United States issued on Dec. 8, 1910, declared the subjects of the German Empire entitled to all the benefits of Section 1 (e) of the Copyright Act of March 4, 1909, including copyright controlling parts of instruments serving to reproduce mechanically a musical work. Similar proclamations were issued on June 14, 1911, in behalf of Belgium, Luxemburg and Norway, and on November 7, 1911, in behalf of Cuba.

As at present advised, the following countries do not fulfil the reciprocal conditions specified in Section I (e) of the Copyright Act of March 4, 1909: Austria, Denmark, Mexico, the Netherlands and Switzerland.

A presidential proclamation issued May 26, 1911, established general reciprocal copyright relations with Sweden, to go into effect June 1, 1911. The copyright relations with Sweden, however, do not include protection against unauthorized reproduction of music by means of mechanical instruments.

On Aug. 11, 1910, the eight representatives of the United States to the Fourth International Conference of American States signed a "Convention concerning Literary and Artistic Copyright." The convention was also signed by the delegates of the Argentine Republic, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Salvador, Uruguay and Venezuela. It was sent by the President to the Senate on Jan. 26, 1911, for advice and consent to ratification, and its ratification was approved by the Senate on Feb. 15, 1911. Up to this time, however, the convention has not been ratified and proclaimed by the President.

Great Britain.—On Dec. 14, 1911, the House of Commons concurred in the New British copyright bill as passed by the House of Lords. This act will go into force on July 1, 1912. The duration of copyright is for the life of the author and a period of 50 years after his death, provided that after 25 years from the death of the author (or, in the case of a work in which copyright subsists at the passing of this act, 30 years) the work may be reproduced provided the person reproducing pays to the owner of the copyright royalties of ten per cent. upon the published price of the work, subject to regulations made by the Board of Trade.

No assignments of copyright made by the author are valid after the expiration of 25 years from his death, unless made by will, except in the case of the copyright in a collective work, viz.: encyclopædia, dictionary, year book or similar work, newspaper, review, magazine or any work written in distinct parts, by different authors, or in which works, or parts of works, by different authors are incorporated. For photographs, and records by means of which sounds may be mechanically reproduced, the term of copyright is 50 years from the making of the negative or original record. Any person may make such mechanical records provided that such work has received the consent of the owner, and provided royalties shall be paid to the copyright owner within two years

after the commencement of this act at the rate of 2½ per cent., and after the expiration of two years, 5 per cent. on the ordinary retail price. After the expiration of seven years, if it appears to the Board of Trade that such rate is no longer equitable, the Board of Trade, after holding a public inquiry, may decrease or increase this rate.

The publication of reports of lectures in newspapers is permitted, unless the report is prohibited by conspicuous written or printed notice affixed before and maintained during the lectures at or about the main entrance of the building in which the lecture is given; any fair dealing with any work for the purpose of private study, research, criticism, review and newspaper summary is not deemed an infringement, and two short passages from an author's works may be published in books for the use of schools, provided that not more than two such passages are published by the same publisher within five years, and the source from which such passages are taken is acknowledged.

The legislature of any "self-governing dominion" of the Empire may repeal any and all enactments relating to copyright passed by parliament (including this act) and enact its own copyright legislation. The term "self-governing dominion" means the Dominion of Canada, the Commonwealth of Australia, the Dominion of New Zealand, the South African Union, and Newfoundland.

The importation of copies made out of the United Kingdom is prohibited, if notice in writing is given to the Commissioners of Customs and Excise by the owners of the copyright.

This act does not require registration, but requires first publication within the parts of the British Dominion to which this act extends, notwithstanding that there has been publication simultaneously in some other place. The work shall be deemed to be published simultaneously if published within fourteen days. The copyright is void if publication is "colorable only and is not intended to satisfy the reasonable requirements of the public."

Delivery of the best edition of a book to the British Museum is required, and a copy of the book on the paper on which the largest number of copies is printed for sale, must be delivered to the Oxford, Cambridge, Edinburgh and Dublin College libraries.

Copies must also be delivered to the National Library of Wales, except in the case of books of such classes "as may be specified in regulations to be made by the Board of Trade."

Canada.—A copyright act was introduced into the House of Commons of Canada on April 26, 1911. This act requires that books are to be printed in Canada, and also requires registration and the deposit of three copies. Notice of copyright must appear in all publications, except paintings, drawings and works of sculpture, for which the signature of the author will be sufficient. Under this act it is possible to exclude all editions not manufactured in Canada. Simultaneous publication within 14 days is required. The book may be reprinted, if the market is not supplied, and much authority is given to the Minister of Agriculture, who has charge of copyright matters. This act was not passed at the last session of the Canadian Parliament, but it is possible that a similar bill may be introduced by the new government.

Australia.—A somewhat similar bill was introduced into the Australian Senate on Oct. 4, 1911, which requires that books must be printed from type set in Australia, or plates made therefrom. There must also be simultaneous publications within 14 days. This bill has passed the third reading, and may soon become a law.

XXXVI. EDUCATION AND EDUCATIONAL INSTITUTIONS

EDUCATION

ANNA TOLMAN SMITH

The year 1911 was marked by intense activity in respect to education and by a noticeable increase in the number of pupils and students. The total enrollment in the schools and higher institutions comprised 19½ million children and youths, or a little more than one-fifth the entire population. Of this total, 93 per cent. were in elementary grades; 5.3 per cent. in secondary schools and less than 2 per cent. in higher institutions. These proportions, maintained with slight variations from year to year, emphasize the importance of the elementary school with which the formal education of the vast majority of the people ends. Of the total number of elementary pupils 92⅗ per cent. were in public schools; furthermore, the chief responsibility for secondary education rests also upon public authorities, for of every 100 pupils who continue their studies beyond the elementary stage, 83 are in public high schools. So far, then, as numbers are concerned, private schools might be regarded as a negligible factor in the national education; but when the strictly professional problems of education are considered, private schools are found to make important contributions to their solution.

ELEMENTARY EDUCATION

STATISTICS OF PUBLIC SCHOOLS

Omitting the private schools and the higher institutions, public and private, it appears that public schools with their nearly 18,000,000 pupils required the service of 520,000 teachers and were maintained at an expense of $450,000,000. This amount is equivalent to $25 for every enrolled pupil, or, estimated on the average attendance, which is about 74 per cent. of the enrollment, $33 per pupil. In addition to this large annual expenditure, very nearly one billion dollars are invested in the school buildings. The distribution of this work by geographic divisions helps to a clearer conception of its bearings. The legal age for school attendance varies from a ten-year period, generally 5 to 15 years of age, to a 16-year period, 5 to 21 or 4 to 20 years of age. For purposes of comparison, however, an estimate is made of the number of children and youths in each state 5 to 18 years of age. On this basis, it appears that the school population is distributed as follows:

North Atlantic division, 23.6 per cent. of the total; South Atlantic, 15 per cent.; South Central, 22.7 per cent.; North Central, 32.3 per cent.; Western division, 6.4 per cent. The proportion of total population enrolled in the public schools exceeds in the southern divisions their relative proportion of the school population, the former ratio being 21.2 per cent. in the South Atlantic division and 22.4 per cent. in the South Central division, as against a general average of 19.4 per cent. for the entire country. In other words, the wage-earning adults of the Southern states have relatively the largest number of children looking to them for school provision. The relative status of the different sections with respect to certain conditions of efficiency in the schools is indicated by the latest analyzed statistics:

STATISTICS OF TEACHERS AND ATTENDANCE, 1909

Geographical Divisions.	Average Daily Attendance.	Number Attending Daily for Each 100 Enrolled.	Average Number of Days Schools Were Open.	Average Number of Days Attended by Each Pupil Enrolled in 1909.	Number of Different Teachers Employed.	Percentage of Male Teachers.	Average Monthly Salaries, All Teachers.
United States	12,684,837	72.5	155.3	112.6	506,453	21.4	$57.00
North Atlantic	3,267,435	78.7	179.0	141.0	123,298	14.4	72.41
South Atlantic	1,695,438	66.5	138.6	84.7	60,485	27.4	62.19
South Central	2,419,190	64.6	123.3	79.7	83,397	33.4	47.87
North Central	4,447,917	75.3	164.7	124.1	202,078	19.7	55.47
Western	854,857	73.8	161.2	119.0	37,195	17.9	59.27

PUBLIC SCHOOL REVENUES AND EXPENDITURES, 1909

Geographical Divisions.	Total.	Percentage Derived from				Expenditures.		
		Permanent Funds and Rents.	State Tax.	Local Tax.	Other Sources.	Total.	Per Capita of Average Attendance.	Per Capita of Population.
United States	$403,647,289	3.3	15.7	71.5	9.5	$401,397,747	$31.65	$4.45
North Atlantic	150,448,566	.7	12.3	76.2	10.8	140,613,641	42.03	5.55
South Atlantic	26,084,659	1.1	36.0	54.4	8.5	26,384,882	15.57	2.19
South Central	33,731,959	9.9	36.1	48.0	6.0	33,735,314	13.94	2.00
North Central	153,329,136	4.6	9.9	75.9	9.6	157,995,797	35.52	5.39
Western	40,052,969	4.3	20.7	68.3	6.7	42,668,113	49.91	6.59

The corresponding statistics for the year 1910-11 indicate marked increase for the country as a whole under all the heads above presented. When the complete returns are received and sifted, it will undoubtedly appear that the two Southern divisions have made decided advance in the length of the school term, in the average attendance of pupils, and in the amount of school income, especially that portion of the income derived from local taxes. This item in particular marks the aroused interest of the people, generally, in the diffusion of knowledge. In this connection it should be noted that the public-school idea has been of late development in the South, and that public contributions to private schools and the extension of brief terms of public schools by private subscriptions still prevail in many localities, at the same time these amounts are not included in the financial statements. Anomalous conditions such as these and the lack of uniformity in the financial accounts of the different states vitiate comparisons to some extent, but not materially when entire sections are considered.

UNIFYING AGENCIES

The Bureau of Education.—Never before in the history of the nation were such strenuous efforts put forth as at present to raise the general level of public intelligence and to equalize the school provision throughout the country. In this effort the federal government, which has no direct control of schools, excepting those for Indians and for the natives of Alaska, bears an important part. The chief agent of the government in this activity is the national Bureau of Education, which greatly increased its equipment for this particular function during the brief but vigorous administration of Commissioner Brown. The policy of appointing specialists to deal exhaustively with particular phases of education, initiated by Commissioner W. T. Harris, was extended by his successor. The new position of this order authorized by Congress during the year under review, is that of specialist in higher education. The post was filled by the appointment of Dr. Kendric C. Babcock, President of the University of Arizona, and long identified with university affairs in this country. Dr. Babcock has developed important plans looking toward the common interests of the higher institutions, and particularly toward an impartial valuation of their diplomas. In this effort he is supported by the cordial coöperation of the principal universities and technical schools. Commissioner Brown also secured appropriations for two special investigations, one pertaining to school hygiene, the other to rural education. Before the plans for this dual work were developed, however, he resigned from the Bureau to accept the Chancellorship of New York University, and Dr. P. P. Claxton, of Knoxville, Tenn., was appointed by President Taft to the vacant commissionership. Dr. Claxton, who is widely known as an inspiring leader in the renaissance of education in the South, has proved his hearty support of the recent expansive policy of the Bureau by the selection of Dr. Fletcher B. Dresslar, late of the University of Alabama, for the conduct of the special investigation into school hygiene. The bulletin on "American Schoolhouses," prepared by Dr. Dresslar, forming No. 5 of the Bureau series for 1910, has had unprecedented circulation in this country and also in Canada and Mexico.

Congressional Appropriations.—The appropriation for the current expenses of the Bureau of Education for the present year was $77,800. For the education of natives in Alaska, including the reindeer service, $212,000. This fund is also administered by the Bureau. The unifying influence of the government is also shown by the system of appropriations for agricultural education. The continuing appropriation for the colleges of agriculture and the mechanic arts amounted to $2,250,000 for the current year. (See XXII, *Agriculture.*)

National Education Association.—The National Education Association at its 49th annual meeting, held at San Francisco, July 8 to 14 of last year, registered 11,480 members

and reported a permanent invested fund of $180,000, of which $9,900 was added during the current fiscal year; the net revenue from this fund for the year amounted to $6,797.71. The total receipts for current expenses were $48,909.08 and total expenditures for the year, $34,978.95.

The meeting was memorable from the fact that the presidency for the first time in the nearly half century of the existence of the Association was held by a woman, Mrs. Ella Flagg Young, Superintendent of Schools, Chicago, who was elected to the office at the preceding meeting of the Association.

The proceedings of the sessions of the seventeen departments of the Association were of unusual interest and many resolutions were adopted, embodying constructive thought on several urgent problems. Among these should be noted in particular the education of sub-normal children by special agencies, and the relation of high schools to colleges. The report of the committee on a system of moral education in public schools, submitted to the council, excited prolonged discussion and, in spite of varied and even conflicting opinions, showed a general conviction that American education must be strengthened in this particular.

The Association naturally draws to itself kindred bodies, and six other organizations of national character met in San Francisco at the same time. Among these were included the Federation of State Teachers' Associations, the Education Press Association and the American School Peace League.

The Department of Superintendence of the N. E. A. held its special meeting, which takes place apart from the general meeting of the Association, at Mobile, Feb. 23-25. Emphasis was placed at this meeting upon the need of closer coöperation between states in respect to the grading of pupils and the uniform certification of teachers, and also upon the great importance of a unified system of accounts such as the Bureau of Education is endeavoring to bring about through coöperation with the census, the National Association of School Accounting Officers and a committee of the Department of Superintendence.

American Association for the Advancement of Science.—The Education Section of the American Association for the Advancement of Science is devoted to investigation of educational problems by scientific methods, and therefore its effects are not immediately felt in the movement of popular opinion or activity in this interest. On account, however, of the distinction of its members, their conclusions in respect to questions of educational theory and practice in time exercise determining influence in these matters. One of the most important papers of the year was that presented before this section by Prof. C. H. Judd, of the University of Chicago, on "The Relation between the High Schools and the Colleges." The vice-president of the section for the coming year is Prof. Edward L. Thorndike of Columbia University.

Religious Education Association.—The need for greater emphasis upon moral training, was the subject of earnest consideration at the 8th general convention of the Religious Education Association, which met at Providence, R. I., Feb. 14-16. Many members of this Association participated in the special conference on the same subject which followed immediately after in New York City. The National Institution for Moral Instruction was incorporated March 29, with a board of directors which includes among others, Dr. Edward F. Buchner of Johns Hopkins University; Dr. Nathaniel Butler of the University of Chicago; Dr. Philander Priestly Claxton, Commissioner of Education.

STATE COMMISSIONS

During the present year the Commission on Industrial and Agricultural Education, appointed by the legislature of the state of Wisconsin in 1909, submitted a report, including recommendations looking toward extension of the public provision of schools, especially in the interests of youths who have passed the normal period of school life, i. e., 14 to 16 years of age. (See *infra, Industrial*

or Vocational Education.) The Illinois Education Commission submitted its final report last year and recommended important measures which are awaiting legislative action, and a similar result was reached by the South Carolina commission. The General Assembly of Indiana, in March, 1910, approved a bill providing for a commission to investigate the subject of industrial and agricultural education.

LEGISLATION

Important legislative measures have been passed in several states either as a direct result of the recommendations of the respective state commissions, or with a view to the reorganization of the system of public instruction.

Pennsylvania has adopted a revised code which sweeps away the outworn anomalies of its old organization and places it in the front rank for administrative simplicity and uniformity. New Jersey has created the office of state school commissioner at a salary of $10,000, and called to its large responsibilities Dr. C. N. Kendall, under whose supervision the public schools of Indianapolis have gained enviable distinction. The Georgia legislature passed a law which, although restricted in its application, reaches the schools whose need is greatest. The specially incorporated districts are not interfered with excepting in the matter of licensing teachers. This power is entrusted to the state board of education, which must also prescribe the course of study, list of authorized text-books, provide for teachers' institutes in each county and compel attendance. The title of state school commissioner is changed to state school superintendent, and the county commissioners become county superintendents, with higher qualifications and increased pay.

The tendency to raise the professional standard of county supervision and increase the compensation is shown by the action in several states and, also, the requirement of uniform standards and certificates for teachers.

AUXILIARY AGENCIES OF PROMOTION

An important event in the recent history of education in this country is the rise of agencies external to the public-school systems and to the higher institutions, but which are exercising a powerful influence upon them all. It is estimated that $100,000,000 have been given from private fortunes during the last decade to promote education, and generally with most large and liberal provisions as to uses.

General Education Board.— The chief of the agencies thus created is the General Education Board, which administers the Rockefeller funds for education. The activities of the board are directed to three main purposes: (1) the improvement of agriculture in the southern states; (2) the development of high schools in that section; (3) the promotion of higher education throughout the country. So far as possible the board works through existing institutions and agencies. The funds at the disposal of the board and disbursements for the past year were as follows:

The Rockefeller Fund.—Principal and reserve, total, $32,246,377; net income, $1,697,851; appropriated to 42 colleges and universities in amounts ranging from $1,000 to $250,000, a total of $1,307,878.86; appropriated for farmers' coöperative demonstration work, $113,251.62; for salaries and expenses, professors of secondary education in State Universities of the South, $29,-859.79.

Special Fund. — Disbursements in 1911: Gift to University of Chicago (Jan. 1, 1911), $9,912,540.74; to Rockefeller Institute for Medical Research, June 7, $924,707.63.

The wise discrimination exercised in the choice of objects adds immensely to the value of these large appropriations.

The Carnegie Foundation for the Advancement of Teaching administers the pension fund appropriated by the founder, originally $10,000,-000 but increased to $15,000,000 in 1908, at which time state universities were admitted to the benefit. For the 12 months ending Sept. 30, 1910, 64 retiring allowances were

granted; the total number of beneficiaries borne on the list at the date named was 364; the general average of allowances for that year was $1,898.65; the total grant in force was $521,000.

In pursuance of the standardizing policy by which the Foundation has determined the admission of institutions to the pension list, a recent report discusses the "College and University in Relation to Medical Education," continuing the attack upon outworn and inadequate courses of instruction, which was begun in the Flexner bulletin issued last year.

Incidental to the main work of the Foundation is the conduct of the exchange of teachers of secondary schools between the United States and Prussia. During the present year 8 American teachers were assigned to Prussian schools and 5 teachers from Prussia to schools in the United States.

Carnegie Endowment for International Peace.—A non-academic movement for general education is illustrated by the Carnegie Endowment for International Peace. Its Division of Intercourse and Education is intended to supplement the work of the two coördinate scientific divisions by carrying forward the educational work of propaganda. In other words, this division will make practical application of the teachings and findings of the divisions of international law and of economics and history.

The Carnegie Institution of Washington endowed April 28, 1904, with a gift of $10,000,000, to which $2,000,000 was added in 1907, received from the founder an additional gift of $10,000,000 in January of last year. The functions of the Institution are the promotion of coöperative research requiring prolonged effort, and of research undertaken by men of marked originality, and the publication of important outcomes of these extended or brilliant efforts.

The Southern Education Board organized in New York City, Nov. 3, 1901, is an outgrowth of conferences on the needs of the South, and although not incorporated is a permanent association. The chairman is Robert C. Ogden of New York, and executive secretary, Wickliffe Rose, Washington, D. C. The annual conference on education in the South elsewhere referred to is maintained by this body.

During the year the funds of the Southern Board and the Peabody Education Fund have been administered in coöperation with state and county authorities in building up state systems of rural schools in the South. Campaigns have been conducted and contributions collected for this cause in 12 states, and in 11 a system of supervision of rural schools has been maintained.

John F. Slater and Anna T. Jeanes Funds.—Efforts of the same general nature, but pertaining to the colored race, are fostered by the John F. Slater Fund, from which $80,000 was allotted last year. A plan of cooperation with the Anna T. Jeanes Fund was also adopted with a view to economy of effort and means. The latter fund, although relatively small, the original gift not exceeding $1,000,000, has by wise administration achieved great results. The central idea of its work is also that of expert aid in the conduct of rural schools. For this purpose the Fund maintains a competent corps of visiting teachers who make the round of schools in the counties and districts to which they are assigned, aiding the teachers by counsel, model lessons, etc. A competent man is also employed as a supervisor of rural schools in each county. These instructors and supervisors, although paid by the Jeanes Fund, are chosen and appointed by the county superintendents. It is estimated that about 2,000 rural schools and 100,000 colored children in the South have been reached by this instrumentality.

The Russell Sage Foundation was organized in 1907 with an endowment of $10,000,000, devoted to the broad social mission of discovering and eradicating so far as possible "the causes of poverty and ignorance." Its efforts in behalf of child welfare are referred to elsewhere. (See *infra, Child Welfare.*)

The educational work of these princely endowments is supplemented and aided by the "social centers" or-

ganized in above four hundred cities and by the women's clubs, improvement leagues, etc., which find a rallying center in the Federation of Women's Clubs, which will hold its next biennial meeting in 1912. (See XV, *Education in Citizenship.*)

MAGNITUDE OF THE PUBLIC SCHOOL SYSTEMS

The impressive fact in the record of public education in the United States is its magnitude. Although comprised in independent state systems, within whose limits are cities free to develop their own systems, the entire field has been brought under such survey through the combined efforts of the school authorities and the National Bureau of Education that the essential particulars are annually summarized. This is a matter of importance, for although in the progress of the work little change can be noted from year to year, the annual record makes it possible to detect and check false returns. Hence, statistics collected and published by the Bureau of Education have promoted accuracy and uniformity in the school statistics of the states and cities, and, at the same time, have increased the efforts of each to attain the highest standard. Undoubtedly the magnitude of the work is mistaken sometimes for a sign of efficiency; but in the end these totals, especially the total expenditure, excite closer scutiny. Question naturally arises as to the return for this large outlay. What are the schools doing to promote civic worth, industrial efficiency and community improvement? Viewed from this standpoint, irrespective of state and sectional boundaries, this great interest falls naturally into two divisions, urban and rural.

VILLAGE AND RURAL SCHOOL IMPROVEMENT

It is estimated that of the 18,000,000 pupils in public schools, 12,000,000 are in non-urban communities and that at least 6,000,000 are enrolled in small country schools. It is in these villages and rural districts that efforts for equalizing the school facilities of the nation center at the present time.

Consolidation.— The experiment, cautiously begun in Massachusetts forty years ago, of replacing small district schools by a central school with means for conveying children to and from the school at public expense, has become a feature of the school systems in 32 states. The annual expenditure for conveyance of pupils in Massachusetts has reached $300,000; in Indiana, $290,000; in Virginia, $25,000; but at these figures it is cheaper than the old system of small isolated schools. Fortunately, however, at this time the people are considering other advantages than that of cheapness. The consolidated school means good school houses, ample grounds, competent teachers, well-balanced programs, regular advance of pupils, the evolution of rural high schools—in short, school facilities equal to those enjoyed by city children. Indiana, by the rapid growth and extent of consolidation, takes the lead in rural-school development. In several states interest in consolidation has led to a new administrative system with the county as the unit.

Rural Schools in the South.—In the campaign for education that has been continued with unflagging zeal throughout the South, the consolidated school is only one of many reforms that have been advanced during the year. For this section of the country it is difficult to distinguish between the school interests and the rural uplift movement as a whole; to the former, however, belong the school tax and the supply of new school houses, in both of which matters the South is making rapid advance. In Virginia, 216 new school buildings were erected or completed during the year at a cost of $681,145. In 1905 there were 74 high schools in the state; the number reported for 1910-11 is 404. In North Carolina the county school tax for elementary schools has been raised from $0.18 to $0.20 per $100, a net gain of $490,000; in the same state the appropriation for rural public high schools was increased from $50,000 to $75,000. The legislature of South Carolina appropriated $20,-

000 for school houses and $60,000 to extend school terms. Georgia raised for school purposes $250,000 more than in any previous year; the state now appropriates $110,000 a year for 11 district agricultural schools.

In Florida 40 of the 47 counties levied the maximum 7-mill tax as against 19, two years ago; only one county is levying less than 6 mills: the income from special tax, $21,000, sufficed to raise the school term to 8 months in the districts providing the tax; only one of these reports a school term less than 6 months.

The legislature of Alabama contributed $65,200 for the building of rural school houses during the past year, and the communities raised about twice as much for the same purpose.

In Kentucky the number of county high schools is rapidly increasing, and a vigorous campaign for rural education has been carried on by the Commercial Club of Louisville. In the session of the Tennessee legislature, the Senate committee reported favorably a bill increasing the school funds from one-quarter to one-third of the gross revenue of the state. Mississippi reports nearly $1,000,000 expended in school buildings and grounds during the year. Texas increased the income from the local school tax by $1,300,000 last year, and the school districts of the state issued bonds to the amount of $3,000,000 for the erection of school buildings.

Conference on Education in the South.—The foregoing particulars are derived from a report to the Conference on Education in the South, which, as regards the extent of territory covered and the scope and variety of its operations, stands without parallel among social-welfare organizations. In each effort the conference seeks to utilize or to cooperate with existing agencies, and thus multiplies its working power. Its most important allies for the improvement of schools are the associations of women working under the direction of county school superintendents. It is difficult in general terms to convey an idea of the enthusiasm roused by this coöperative effort. In Wake County, N. C., in which 10 years ago not a single district raised a local tax for education, more than 20 districts last year voted taxes for school buildings, schools have been consolidated, transportation provided for pupils, and 18 school farms have been operated. The latter is a device of the county superintendent, whose idea was to make the farm a financial asset and, at the same time, a center at which the country people should gather for the discussion of their needs and for instruction as to better modes of life and work. The farms are worked in common, and the proceeds of the crop, chiefly cotton, devoted to school improvement. From this initiative has come the act of last year providing for the establishment of one "farm-life school" in each county, with an annual state appropriation of $2,500 for each, conditioned upon the county or township providing adequate buildings and equipment and a maintenance fund equal to the state appropriation.

Agricultural Clubs.—From a summary of the work of the boys' and girls' agricultural clubs presented at the conference by O. B. Martin, of the U. S. Department of Agriculture, it appears that 66,000 boys were engaged during the year in planting corn, each boy covering an acre on his father's farm. The boys make surprising records, 100 boys averaging 133⅓ bushels of corn to an acre, the average production of the state (South Carolina) being only 18 bushels. Three thousand girls were employed in tomato growing, each one being allotted a tenth of an acre, the tomatoes to be canned. This work is under the general direction and supervision of agents from the Department of Agriculture, who visit the farms once a month.

The demonstration work, and the boys' and girls' clubs fostered by the Department of Agriculture, are carried on in all sections of the country with appropriate modifications, and every section has one or more centers of the rural uplift movement which everywhere includes school improvement.

Massachusetts.— The center for New England is the annual rural conference at the Massachusetts Ag-

ricultural College, due to the organizing skill of Pres. Butterfield. The last session, held Aug. 2-4, brought together 300 delegates representing rural organizations in nearly all the towns of the state; the proceedings consisted mainly of the presentation of plans of coöperative effort which had been successfully carried out. Among significant resolutions passed at the close of the conference was one drawn up by the clerical delegates who united in approving the conference but expressed regret that graduates of theological seminaries should have received their "highest inspiration and broader vision of the needs and opportunities in their different fields of labor in an agricultural college." The theological seminaries, it should be said, however, are rapidly taking up the study of social-improvement work in a practical way. (See XVII, *Charity;* and XXXIII, *Religion and Religious Organizations.*) The great importance of the conference was recognized also by a memorial addressed by the members to the governor of Massachusetts, petitioning for their continuance and a grant for their support.

Among the forceful centers of the new rural school movement should be mentioned the Agricultural College of New York (Cornell University) whose bulletins and nature leaflets are in demand all over the country, and the agricultural department of Illinois University. The latter institution sends out a University Special to rural schools which made a successful two weeks' trip in February last. The train consisted of two cars abundantly equipped with illustrative material for the lecturers, and was accompanied in each county through which it passed by the county superintendent. About 1,000 children attended these instructive talks.

URBAN SCHOOL SYSTEMS

Statistics.—In the annual reports of the Bureau of Education the urban school systems of the United States are classed in two divisions, one including 674 cities of 8,000 population and over, the other division, 666 cities and villages of 4,000 to 8,000. The combined enrollment in the public schools of the two classes for the current year was 5,800,000, a little less than one-third the enrollment in all public schools. The number of teachers in the urban schools was 144,784, or more than one-third the teaching force of the nation; the public expenditure for these schools is estimated at $215,000,000, or more than half the total expenditure for public instruction.

The extent, and what may be called the elaborate machinery, of public education in the cities is graphically shown by the following summary pertaining to the scholastic year 1909-10:

STATISTICS OF URBAN SCHOOLS

	Cities of 8,000 Population and Over.	Cities and Villages 4,000 to 8,000
Number of school systems	674	666
Enrollment	5,056,798	750,754
Average daily attendance	4,020,693	594,455
Average length of the school term, in days	187.8	180.9
Male supervising officers	5,125	1,662
Female supervising officers	6,019	1,586
Whole number of supervising officers	11,144	3,248
Male teachers	10,935	2,104
Female teachers	114,311	17,434
Whole number of teachers	125,246	19,538
Expenditure for tuition	*$106,979,126	†$9,466,567
Total expenditure	*$192,825,699	†$18,280,600

* 592 cities only.

† 539 cities and villages.

It is estimated that the enrollment in private and parochial schools of the same cities, chiefly engaged in elementary instruction, would add one and a half million pupils to the enrollment in the public schools. In addition to the public day schools, 224 cities report evening schools with 375,000 pupils and a force of about 9,400 teachers.

The schools of the larger cities all approach a common type and present common problems; hence the significance of the fact that more than one-fourth the urban school population is massed in six cities, which, by reason of the funds and the elaborate machinery at their disposal, are able to command the highest order of talent for the solution of their problems. Naturally in respect to matters of common interest, other cities follow the lead of this group of large centers.

The aggregate annual expenditure for public instruction in the six cities referred to is above $63,000,000. New York expended last year $31,400,000; Chicago, $12,000,000. Baltimore stands lowest in the list in this respect, its expenditure being $1,660,000, a sum exceeded by 13 cities not in this group. The mere mention of these particulars indicates the chief difficulty in the way of needed extensions and improvements. In many cities the expenditure for this one object amounts to one-third the entire revenue and the limit of taxation for this purpose seems to have been reached.

Problems.—The chief educational problems of cities are as follows: the means of maintaining a force of competent teachers; of preventing the early withdrawal of pupils from school; and of making the school training of practical account as a preparation for the future lives of the pupils.

Early Withdrawal.—Recent investigations indicate an alarming tendency toward the early withdrawal of children from school. Accumulated records show that in the six largest cities, the number of public pupils in every 1,000 children seven years of age and the number of pupils in every 1,000 at 15 years of age are as follows:

Cities.	Number of Pupils in every 1,000	
	Seven Years of Age.	Fifteen Years of Age.
New York	909	348
Chicago	968	404
Philadelphia	913	310
St. Louis	851	388
Boston	969	468
Baltimore	929	370

In every one of the above cities the decline is at its height in classes for 12 and 13 years of age, and is greater for boys than for girls. Minneapolis is the only large city in the Union which keeps three-fourths of the pupils who enter at 7 years of age till they reach the grade for 15 years of age.

Retarded Pupils.—A second alarming condition is indicated by the number of pupils who are in grades below the proper age, or to use the technical term, "retarded pupils." Taking the grades from the second to the eighth, inclusive, the proportion ranges from 15 to 60 per cent. While it is obvious that a great part of the responsibility for these unfortunate conditions rests upon parents, it is also certain that the upper grades have fallen too much into mechanical routine, and this conviction explains the existence of a vigorous campaign of reform in which a few cities are bearing the most active part.

Vocational Training.—The demand on the part of labor unions and employers that the public schools shall give to the children of the artisan and commercial classes training better suited to their future callings has determined in great measure the trend of the new efforts. They relate chiefly to flexible classification; new direction of school training for the years 12 to 14; new orders of training for youth 14 to 16 years of age. In respect to these matters, experiments are going on in all the principal cities of the country. Boston and New York have led in provision for vocational training.

Chicago began the fall session of the public schools with the experi-

ment of a division in the sixth, seventh, and eighth grades of the course of study into the industrial course and the general course. A technical high school for girls has also been established, in which arrangements have been made to admit a small number of girls above 14 years of age who are still in the upper grades of the elementary course. This experiment, which bears the stamp of the practical spirit of Superintendent Ella Flagg Young, will be watched with unusual interest. Investigations have been undertaken in several cities which foreshadow important developments in the future.

Baltimore.—The employment during the year of a special commission to investigate the system of instruction in the public schools of Baltimore led to an exhaustive comparison of the systems of 13 of the largest cities in the country. The report of the Commission (published by the Bureau of Education) is very comprehensive and will remain for a long time a standard reference work on the subject of city school systems.

CHILD WELFARE

The Propaganda.—The city systems of education are the focusing centers of those activities which are conveniently grouped under the head of child welfare. (See also XVII, *Prevention.*) The movement for promoting the physical training of the children and youth of cities has taken two directions: one, that of scientific investigation; the other, of remedial efforts. The public school furnishes a basis for both, and both are maintained by independent organizations working in close relation with the school authorities. The Bureau of Municipal Research, established in New York in 1906, and the similar bureaus since established in all the large cities and also in several counties, for example, Fort Wayne, Ind., and Westchester County, N. Y., have conducted important investigations into the causes of backwardness in school children, the need and methods of medical investigation of schools, etc. The director of the Child Hygiene Department of the Russell Sage Foundation, Dr. Luther Gulick, has concluded, after careful investigation, that 16 per cent. of our school children fall out of school from conditions of ill health that are remediable. The American Association of Hygiene maintains an active propaganda on the subject, and these various organizations by public meetings, discussions in the press, bulletins, etc., have exercised great influence upon legislators and school authorities. The outcome of this agitation is seen in increasing regard for sanitary conditions in the school buildings, the rapid extension of medical inspection of school children with provision for doctors and nurses for the poorest children, in the general employment of special teachers of physical training, and in the experiment of outdoor schools for anæmic children.

Medical Inspection.—The department of child hygiene of the Russell Sage Foundation published during the year an exhaustive bulletin on the work of American cities for the health of school children. It includes reports from 443 cities in which the medical inspection of schools is well organized. In 552 cities vision and hearing tests are conducted by the teachers, and in 258 cities this is done under the direction of doctors. For the service of medical inspection in the cities, 1,415 doctors are employed, more than half the number being in cities of the North Atlantic states, and more than a fourth in the North Central states. School nurses supplement the work in 415 cities, 90 per cent. of the number employed being in the same two sections. The services of doctors are donated in 75 cities, and of nurses in 21 cities. In the remaining cities salaries to examining physicians range from fees according to service up to $4,000 a year.

New York.—The development of child-welfare movements in the chief cities of this country was impressively set forth by the Child Welfare Exhibit in New York. The organizing committee brought great energy and large resources to the service of the enterprise, which was carried through at an expense of $70,000. Apart from the department of schools, in charge

of a special committee of which Dean Thomas W. Balliet of New York University was the chairman, the exhibit emphasized in many ways the tendency of the varied forms of child-welfare activities to focus in the schools or to coöperate with the school authorities. The educational section not only made a graphic presentation of the present school activities of the metropolis, but of the extensions which are urgently demanded. Among these were increase in the number of school shops, school kitchens, vocation schools, and supplementary visiting teachers and the wider use of school buildings for social purposes outside of school hours.

Chicago.—The Child Welfare Exhibit in New York City, the first of its kind on a large scale, was followed by a similar exhibition at Chicago, May 11-25. The exhibit, which was financed by Mrs. Cyrus Hall McCormick, Jr., was organized on a plan similar to that of New York, with certain additional features. Among the latter, was an impressive presentation of the condition of child labor in Chicago. It included copies of labor certificates issued to children who have just passed the 14-year age limit, many of whom have hardly mastered the elements.

Prominent among the organizations for promoting the well-being of the young are the American Physical Education Association (president for the current year, Dr. George L. Meylan of Columbia University), and the Playground and Recreation Association of America (honorary president, Theodore Roosevelt; president, Joseph Lee, of Boston).

Child Labor.—The most important body working in the interests of childhood is the National Child Labor Committee, with headquarters in New York, which called the annual conference on the subject last year at Birmingham, Ala., March 9-12. From a report presented by Owen R. Lovejoy, general secretary of the committee, it appears that during the past seven years, five southern states and the District of Columbia have passed their first laws regulating child labor, and almost every state in the Union has placed increased legal restrictions upon the hours for child employment and the kinds of labor in which it shall be allowed. These achievements are largely due to the efforts of the National Committee. The standards of legislation aimed at are: exclusion of children under 14 from the field of competitive industry; regulation of employment of children between 14 and 21; and prohibition of night work for children under 16. (See XVI, *Labor Legislation.*)

School Gardens.—The increase in the number of city school gardens has been phenomenal since the first essay of the kind was made at the George Putnam Grammar School in Boston, in 1891. The Massachusetts Horticultural Association encouraged the work from the first. The establishment of school gardens in connection with normal schools, after the example set by Boston in 1901, has made the management of school gardens a part of the training of teachers generally and thus insured the wide diffusion of the work. Cornell University, through its Bureau of Nature Study, has given an immense impetus to the movement in New York State, and while its efforts are primarily intended to aid children of the country, its influence has been felt in the cities also. In Washington, D. C., the school garden and the nature lessons to which it leads have been brought within the reach of the entire school population through the coöperation of the Bureau of Plant Industry in the Department of Agriculture, and the intelligent supervision of Miss Susan B. Sipe, one of the chief directors of this work in the United States. In some cities, the school-garden activity has merged with the playground movement, and parts of the former are beautified by the work of children. The School Garden Association of New York, which has a membership of about 1,500, maintains five model school gardens, one in each borough of the city, and through the efforts of the association, aided by other citizens, 123 school gardens have been established by private funds. The park associations have given liberal aid. The Manhattan Department of Parks has recently set aside $10,000 for this purpose.

INDUSTRIAL OR VOCATIONAL EDUCATION

Organization.—The recent movement for industrial or vocational training has in view provision at public expense for preparing young people for specific industries. The movement differs in this respect from the earlier manual-training movement; and it differs also from the narrow forms of industrial training by its broader scope as regards both the programs of the schools and their general establishment. Two systems of public schools of this class have already gained recognition; one, maintained as a part of the regular public school system of a given city, and the other organized under a special state law and subject wholly or in part to state control. Four states have the latter system, namely, Connecticut, which maintains two schools wholly at the cost and under the control of the state; Massachusetts, which pays half the cost of maintaining any public industrial school established with the approval of the state commission on industrial education; twenty such schools are reported from the state, and also three independent incorporated textile schools; New Jersey, which likewise contributes half the annual cost of any such school, between the limits of $3,000 and $7,000; and New York, which contributes annually certain sums based on the length of the school session and the number of teachers employed. An enrollment of at least 25 pupils is necessary to obtain this state aid. So far, 11 schools have been established under this provision.

Trade Schools for Girls are rare, and are almost exclusively located in the northeastern manufacturing states. Of 18 schools of this class, recently reported, 14 are in Pennsylvania, New York and Massachusetts. Their courses of instruction are mainly limited to the various forms of dressmaking, garment making and millinery.

Wisconsin.—The Wisconsin Commission of Industrial and Agricultural Education made an exhaustive report to the governor of that state in Jan., 1911. As a result of this report a law was enacted creating the ground-work for an independent system of industrial high schools in cities of more than 5,000 population. An independent tax may be levied by such cities, and the state will supplement this tax with an equal amount. Local advisory boards, representing labor unions and trade interests along with the educators, will be coördinated through the State Commission Industrial Education Board.

Associations.—An important feature of this movement is the interest which it has awakened on the part of two great organizations, namely, the National Association of Manufacturers and the American Federation of Labor. Two national associations have also been formed in the interest of this cause: the Nation Society for the Promotion of Industrial Education, organized in 1906 in New York City, which now has branches in 10 states, and state committees in 16 other states; and the National League for Industrial Education, established in 1909 for the specific purpose of promoting the enactment by Congress of measures pertaining to the subject. Every action of public authorities in the matter is narrowly scanned by the Federation of Labor to prevent the adoption of any measure which threatens to restrict the development of the children of the laboring classes or to give any particular industry an advantage over others.

Private Endowments.—The movement for industrial education at public expense was anticipated by private endowments for the same purpose. Among the most important of the endowed trade schools is the School of Applied Industries, which forms a department of the Carnegie Technical Schools at Pittsburgh. The city contributed an ample site for the institution, and funds for buildings and equipment have been supplied by the founder, as needed from time to time, in addition to which he has increased his original gift of a million dollars to the present endowment of $7,000,000. The first group of

buildings was completed and opened to pupils in October, 1905.

One of the oldest and most successful schools of this class is Pratt Institute, of Brooklyn, which includes five separate schools—a school of fine and applied arts, a normal school, a domestic science school, a technical school, and a trade school.

The David Rankin, Jr., School of Mechanical Trades, St. Louis, Mo., was endowed and established in 1907 and opened in 1909. It is intended for boys 14 years of age and upward, and maintains both day and evening classes. A tuition fee of $15.00 per session of six months is charged.

VOCATIONAL GUIDANCE

Purpose.—Vocational guidance is one of the latest developments in public systems of education, but it is one which has aroused great interest, as is indicated by the fact that in the National Conference on Vocational Guidance held in Boston, Nov. 15 and 16, 1910, delegates from 45 cities were present. The purpose of vocational guidance is not that of finding a place for a child, but rather of leading both child and parents to a careful consideration of his industrial needs and aptitudes under intelligent guidance. At present several cities are experimenting in this direction, following the lead of Boston and New York. In Boston, a Vocation Bureau has been established, which is either affiliated with, or working in closest relations with, the committee on vocational direction of the Boston School Board, the Boston Home and School Association, the Girls' Trade Education League, and the Woman's Municipal League. The committee on vocational direction of the school board was formed expressly that it might begin the work of guidance within the schools before the pupils leave the grammar grades.

New York.—In New York, the work began in an attempt to secure positions for pupils, undertaken originally by the students' aid committee of the High School Teachers' Association. This purely voluntary effort proved so useful that in 1910 an application was made for public support for the work and for the formation of a central vocational bureau for general oversight. The latter part of the proposition has not yet been adopted, but an appropriation of $250 was recently granted to each high school for expenses connected with the vocational work.

Boston.—It may be said, then, that Boston represents the fullest development of this provision. The activities of the Vocation Bureau in that city comprise (1) the maintenance of a central office for the collection and classification of information relating to the occupations of the community; (2) means of impressing upon parents and children the need of training for every form of business; (3) personal vocational counseling; (4) furnishing opportunities for consultation between employers and those who seek employment, or who are in the position of counselors in this matter.

Courses of Instruction.—Experience has shown that special training is required for those who intend to give vocational guidance, and this has led to the establishment of a course of instruction for counselors conducted by the Director of the Vocation Bureau. A more recent development in this direction is a course given last year for the first time at the session of the Harvard Summer School. As an enlargement of the training work, the Vocation Bureau is planning for the establishment of one or more departments of graduate study for vocational counselors, and propositions have been made to leading universities for the establishment of such a department under their auspices. The Boston School Board has also under consideration the establishment of a department of vocational guidance under the charge of an expert who shall be subordinate to the superintendent of schools. In both New York and Boston a voluminous literature pertaining to trades, to vocational training, and to the condition of the laboring classes has developed from this work.

The subject of vocational guidance is fully treated in the forthcoming report of the Commissioner of Labor, Charles P. Neill, entitled "Industrial

Education in the United States." The report is not only an exhaustive presentation of the entire matter, but is a model in arrangement and classification.

COMMERCIAL AND BUSINESS SCHOOLS

The earliest form of vocational training for which provision was made in this country was that offered in commercial and business schools. The enrollment in these schools reached its maximum in 1908 when 558 schools of this class reported 154,963 students; in 1910 the number of such schools was 541, and the total number of their students, 134,778. There were also 98,862 students pursuing business and commercial courses in schools and higher institutions for general education, making a total of 223,640 students preparing for business life.

SECONDARY EDUCATION

THE PROBLEM OF STANDARDIZATION

The chief problems of education, considered as a formative force in national life, pertain to the province of secondary schools. They are universal problems, but they present a startling complexity in this country, on account of the conflict between the democratic theory of equality of opportunity for all children, and the unequal pressure of circumstances which forces young people into distinctive groups. This collision between theory and conditions has brought about the separation of public high schools into classical, technical and business, to which a fourth group, the agricultural high school, has recently been added. This fourfold classification is now accepted as a settled policy, and a new problem, that of standardization, absorbs attention. The latter has furnished the chief topic of discussion during the year in every association that pertains to secondary education: in a number of cities and states special committees have been appointed by the educational authorities with a view to the readjustments required. One fact pertaining to this subject stands out clearly in the year's record. The universities which have heretofore controlled the matter of standards, are yielding place to the schools themselves, or rather to the dicta of the people which is instinct in the public high schools. For proof of the statement, it is enough to refer to the new plans of admission adopted this year by Harvard University and by the University of Chicago, which are considered under the head of higher education. The position of the high schools themselves in this matter was summed up in an elaborate report on the subject submitted to the department of secondary education of the National Education Association at its meeting in San Francisco, which was quite the most significant event of the meeting. The report maintained that any student who has successfully completed a well-planned high-school course should be admitted to college. It was made clear, however, that a "well planned course" in the meaning of the report was a stiff disciplinary course.

Private high or secondary schools are not so deeply involved in this discussion, because they are generally intended as college preparatories. This class of schools, however, joins the public secondaries in the protest against the varied requirements of different universities; by this action they have assisted in bringing about unity in a system of equivalents, to the great advantage both of the schools and the higher institutions. The endowed secondary schools have also peculiar advantages in dealing with matters of internal discipline common to all schools of this grade, such as those of fraternities and athletic contests, which have been peculiarly disturbing the past year.

STUDENTS IN CERTAIN COURSES AND STUDIES

Public High Schools

Courses, studies, etc.	Number of students.	Per cent. of total number.	Male students.	Per cent. of total number of male students.	Female students.	Per cent. of total number of female students.
Students preparing for college:						
Classical course.....	28,200	3.08	11,766	2.95	16,434	3.18
Scientific courses....	22,820	2.49	17,344	4.35	5,476	1.06
Total preparing for college	51,020	5.57	29,110	7.30	21,910	4.24
Graduating in 1910...	111,363	12.17	43,657	10.95	67,706	13.11
College - preparatory students in graduating class.....	37,811	33.95	19,426	44.50	18,385	27.15

Public and Private High Schools and Academies

Courses, studies, etc.	Number of students.	Per cent. of total number.	Male students.	Per cent. of total number of male students.	Female students.	Per cent. of total number of female students.
Students preparing for college:						
Classical course.....	39,606	3.84	19,104	4.21	20,502	3.55
Scientific courses....	30,569	2.96	24,367	5.37	6,202	1.07
Total preparing for college.....	70,175	6.80	43,471	9.58	26,704	4.62
Graduating in 1910...	125,772	12.18	50,533	11.13	75,239	13.01
College - preparatory students in graduating class.....	43,957	34.95	23,829	47.16	20,128	26.75

STATISTICS OF SECONDARY SCHOOLS

Number of Students.—The striking fact in the current record of secondary schools is that of their increase. In 1909 the number of students in all classes of secondary schools passed the million mark, being 1,034,827, but for the school year ending June, 1910, this total was increased to 1,131,466, or by 96,639 students in a single year. The indications are that complete returns for 1911 will show still greater gains.

Distribution.—Of the total enrollment in 1910, public high schools claimed 915,061 pupils (398,525 boys; 516,536 girls); private high schools and academies 117,400 (55,474 boys; 61,926 girls). The remainder were in normal schools and preparatory departments of higher institutions.

Public High Schools and Academies.—Fuller details with respect to secondary education are only available for public high schools and academies. The teaching force of the 10,213 public high schools numbered 41,667 (18,890 men, 22,777 women). Of the total number of schools, 838 were in cities of 8,000 population and over; these schools had 15,938 teachers and 432,643 students. Above 88 per cent. of the total students were in high schools having a four-year course. The remaining schools had courses from one to three years. The report of equipment and financial conditions

is incomplete, but above 80 per cent. of the public high schools have excellent libraries and 7,888 of the schools report scientific apparatus, furniture, etc., to the value of $13,435,789. Only 3,695 of the 10,213 public high schools reported their income for the year. These schools received from public appropriations $15,879,519, receipts from tuition fees and all other sources bringing their aggregate income to $17,274,595. The corresponding data for private secondary schools are exceedingly incomplete, but it is an interesting fact that 217 of these private schools possessed endowment funds aggregating $16,803,751.

Curricula.—From a very interesting investigation made by the Bureau of Education into the changes of secondary curricula, it appears that in the last decade Latin declined; Greek appears to be vanishing; French and German have advanced; algebra and geometry are steady; the sciences have fallen off, but notable gains have been made in English, history and civics.

Preparation for College.—As regards preparation for college, the status of the secondary schools in 1910 is shown in the tables on the preceding page.

Private Institutions.—A noticeable movement in the distribution of the body of secondary students is the recent relative increase in the enrollment in private institutions of this grade. Comparison between the scholastic years 1908-9 and 1909-10 shows that the ratio of increase in the student body of public secondaries was 8.74 per cent., as against an increase of 12.36 per cent. for private institutions. The only section in which the ratio of advance for public secondaries was greater than for private was the South Central, in which there has been a remarkable increase in the number of public high schools.

TRAINING OF TEACHERS

Distribution.—The provision for training teachers is steadily increasing in this country, and the professional standard rising. The latest statistics showing the distribution of this work among the various classes of institutions, of which it is a feature, are as follows:

Classes of institutions.	1909–10.	
	Institutions.	Students in teachers' training courses.
Public normal schools	196	79,546
Private normal schools	68	9,015
Public universities and colleges	29	2,818
Private universities and colleges	81	4,145
Public high schools	694	13,641
Private high schools	189	4,010
Grand total	1,257	113,175
In all public institutions	919	96,005
In all private institutions	338	17,170

Graduates.—The number of graduates reported by the 264 public and private normal schools for 1910 was 15,430, or 17.4 per cent. of the total enrollment in all training courses for teachers. Estimating that the other institutions mentioned above furnished from their normal students the same proportion of graduates, the number of trained teachers to be added to the teaching force of the country would be about 20,000.

Facilities.—Provision is made in all the states for the free tuition of teachers in training, and in some states their living expenses are partly paid from public funds. Nearly all the states support public normal schools, but several arrange for the professional training of teachers in the state colleges.

Men Teachers.—It is noticeable that the proportion of men students in the normal schools and departments steadily declines, notwithstanding the growing conviction that more men are needed in the profession.

Admission, Courses and Expenditures.—The leading normal schools now require for admission the completion of a four-year high-school course or its equivalent; they offer four-year degree courses which are cultural as well as professional, parallel to regular college courses;

they provide for specialization in manual arts, domestic economy, agriculture, and the natural sciences, to meet the demand for teachers of these special subjects. The expanding curricula necessitate larger equipment. Of the public normal schools, 185 report 1,331,705 volumes, having an estimated value of $1,627,801. Scientific apparatus, machinery, and furniture reported by 159 schools have an aggregate value of $3,807,530. The value of grounds reported by 151 schools is $7,701,901, and of buildings reported by 173 schools, $33,260,113. The amount of money paid by the states and municipalities for public normal schools reached the high-water mark in 1910, when the aggregate of public appropriations was $9,266,195.

Summer Normal Schools.—The old form of teachers' institutes for the brief training of teachers already in service has given way to summer normal schools which, because of their longer terms, ranging from 3 to 12 weeks, far surpass the institutes in academic and professional influence. Summer normal schools are required by law in 14 states and are always well attended, as teachers are prepared in them for the state certificate examinations.

The character and scope of university summer schools may be seen at a glance from the following particulars:

Universities.	Registered Students, 1910.		
	Total.	Teachers Enrolled.	
		Total.	Per Cent.
Columbia	2,629	1,691	64
Chicago	.....	2,291	.....
Cornell	987	377	38
Illinois	691	322	46
Knoxville	2,529	1,500	59
Michigan	1,230	283	23
Missouri	576	261	45
Nebraska	440	100	23
New York	529	349	66
Texas	762	587	77
Tulane	922	483	52
Virginia	1,350	943	70
Wisconsin	1,263	630	50
Totals and averages	10,029	5,083[1]	51

[1] Not including Chicago, Knoxville, and Virginia.

Of the total number of teachers enrolled, 7.2 per cent. were college teachers; 5.5 per cent. engaged in normal schools; 42 per cent. were principals of high schools or superintendents; 45.3 per cent. were in elementary school work.

The above schools do not reach the rural school teacher to any great extent, excepting only Knoxville and the University of Virginia. The former, the distinctive summer school of the South, is due to the initiative of Dr. P. P. Claxton, the present federal Commissioner of Education. The school exercises great influence over a wide territory. Its enrollment is exceeded only by that of the summer session at Columbia University, which has the advantage of the unrivalled facilities offered by Teachers College.

Auxiliary Agencies.—Libraries and museums, which were once almost exclusively adjuncts of higher education, now supplement every grade of schools; not only so, but apart from schools they fill a special place in the provision for popular education. There are at least 2,300 libraries in the United States having over 5,000 volumes each. Of these 1,130 are general, 43 belong to the federal government, and 54 are state libraries. The college libraries in this class number 425 and the school libraries about 225. Professional schools in 1908 reported 229 libraries of this extent. The number of public, society, and school libraries having above 1,000 volumes exceeds 8,000.

Museums.—Interest in museums and their educational bearings has been greatly promoted by educational expositions, and at present four states, at least, have permanent educational exhibits for reference or for loan collections, and in seven other states nuclei for such exhibits have been formed. The state normal schools in about 20 states are supplied with museums or permanent exhibits to aid in the professional training of teachers. Educational museums are maintained for the same purpose in the educational departments of many universities. Clark University has collections of peculiar importance to the investigations carried on by spe-

cialists in school hygiene, school architecture, child study, and other subjects.

The most complete and perfectly appointed museums restricted to education are the Educational Museum of St. Louis Schools and the Educational Museum of Teachers College, Columbia University. Both are models of classified arrangement and efficient administration. The St. Louis museum, as its name implies, is intended to serve the public schools of the city. This is done by loans of illustrative material, by an annotated catalogue supplied freely to teachers, etc. In a single term the number of collections ordered by the schools has reached 25,000. Many of these are duplicate collections, of which the museum maintains above 6,000. In addition to this circulating department, there is a special study exhibit for teachers which comprises home material and collections from foreign countries.

The museum at Teachers' College dates from 1887, but the era of its vigorous development began with the appointment of a special curator in 1899. Its collections are exceedingly comprehensive, and its value is enhanced by the temporary exhibits placed at its disposal from time to time. Portable collections are also sent out for the use of schools, lectures, and local exhibits, although the service of the institution is chiefly related to the college and its practice schools.

There are at least 350 museums in the United States, of which 250 pertain to natural history. Of the latter, 175 belong to colleges and schools. The public museums of this character are rapidly following the example of the libraries in maintaining a children's department and publishing annotated lists and illustrated leaflets for the use of schools and teachers. The National Museum at Washington and the Brooklyn Museum of Arts and Sciences furnish the most complete examples of this particular adaptation of their collections. Educational work is a feature also for which extended provision is made in the plans for the new building for the Field Museum of Natural History in Jackson Park, Chicago.

HIGHER EDUCATION

STATISTICS

Institutions.—There are above 600 institutions in this country pertaining to the province of higher education. These are either colleges, technical schools, or universities organized to give courses of instruction leading to degrees. The colleges concentrate upon undergraduate courses leading to the bachelor's degree; the technical schools, in like manner, have as their goal the degree of bachelor of science, or a first degree in engineering; the universities not only have undergraduate departments, but also make large provision for graduate and professional study.

Students and Teachers.—The total enrollment in these higher institutions in 1910 was 301,634 students, distributed as follows:

Departments.	Students.
Preparatory	66,042
Collegiate	174,213
Graduate	10,706
Professional	39,241
Special	11,432
Total	301,634

As the preparatory departments are engaged in secondary instruction, they may be excluded from the present consideration.

The teaching force for the remaining departments comprises very nearly 23,000 professors and instructors, which is equivalent to one instructor for every 10 students.

Coeducation.—Of the entire number of these higher institutions, 142 admit men only, 352 are coeducational. The former report 37,243 undergraduate students; the latter 116,623, of which number 75,831 are men, that is more than twice as

many as in the separate colleges for men. It is also noticeable that the number of women students in the coeducation colleges, viz.: 40,792, is twice as many as in separate colleges for women.

The distribution of students by geographic sections in each of the two classes of institutions, public and private, as reported last year, was as follows:

State or Territory.	Public Colleges and Universities.				Private Colleges and Universities.			
	Institutions.	Total Number of Undergraduate and Graduate Students.			Institutions.	Total Number of Undergraduate and Graduate Students.		
		Men.	Women.	Total.		Men.	Women.	Total.
United States.....	89	49,919	17,707	67,626	513	70,663	46,423	117,086
North Atlantic Division.	10	7,148	180	7,328	99	34,995	14,064	49,059
South Atlantic Division.	23	6,322	399	6,721	96	6,749	7,120	13,869
South Central Division..	13	5,779	1,412	7,191	98	4,981	6,611	11,592
North Central Division..	23	23,462	11,594	35,056	193	20,541	16,412	36,953
Western Division.....	20	7,208	4,122	11,330	27	3,397	2,216	5,613

Value of Property.—The property reported by the 494 higher institutions for men and for both sexes, is as follows: Their libraries have 14,059,180 volumes, of $19,246,218 estimated value. The value of scientific apparatus, machinery, and furniture is $32,747,424, and the value of live stock reported $760,246; the grounds are valued at $67,688,727, and buildings at $211,440,008. Included in the value of buildings there are estimates of $17,153,536 for dormitories. The institutions possess productive funds aggregating $259,376,878.

Income.—The receipts of these institutions for 1910 amounted to $80,438,987. From an examination of the items it is seen that public appropriations, state, city, and federal, furnished 30 per cent. of the receipts; private benefactions, 23 per cent.; productive funds, 14 per cent., and tuition fees, 18 per cent. Omitting the amounts received as additions to the endowment funds, the working income for the year was $70,667,865.

Colleges for Women.—Of the 108 colleges for women 16 are engaged almost exclusively in college work, while the remaining 92 institutions have a large proportion of their students in preparatory and special courses. The former are much more fully equipped for the work of higher education than the latter; their endowment funds, for example, are nearly ten times as great, being $12,880,000 as against $1,150,000 reported for the 92 institutions; the aggregate receipts of the 16 colleges in 1910 were $4,845,615; and of the 92 colleges $3,085,132. Of the former number ten are situated in the North Atlantic states and three in the South Atlantic; in these older sections of the country they afford the opportunities for women, which in the other sections are provided in coeducation institutions. They are therefore properly included with the colleges for men. As to the colleges for women in the second group, although it cannot be claimed, as a rule, that their collegiate work reaches the highest standard, they do not materially affect the relative status of the different sections of the country in respect to funds for the work of higher education.

The total receipts of higher institutions in 1909, as reported in the YEAR BOOK for 1910, amounted to $76,650,969, while the income exclusive of additions to endowment funds was $65,830,568.

Productive Funds.—The total productive funds reported by the higher institutions in 1910, and the total income, were distributed as follows:

Sections.	Productive Funds.	Total Income.	Total Receipts Exclusive of Additions to Endowments.
United States	$273,423,328	$88,369,734	$77,873,367
North Atlantic Division	131,189,281	34,404,156	28,219,641
South Atlantic Division	14,539,902	8,208,378	7,776,136
South Central Division	18,856,748	6,474,892	6,245,440
North Central Division	73,943,623	29,578,418	26,541,097
Western Division	34,893,774	9,702,890	9,191,017

SALIENT FEATURES OF THE RECORD

Courses and Degrees.—In the detailed analysis of the statistics of higher education, two conditions strike the attention: first, its varied character; second, the concentration of its resources. Excluding the institutions for women only, the collegiate students are distributed in nine different courses: the classical course claims 30 per cent. of the total number; the general science course, a little more than 7 per cent.; the various branches of engineering, 19 per cent. Of the remainder, music draws the largest proportion, followed closely by agriculture and education. This division of students is emphasized by the variety of degrees conferred in course. Fourteen different orders of the bachelor's degree are included in the record for 1910. The A. B. led with 12,600 recipients (7,043 men; 5,557 women); the B. S. followed with 5,793 (men, 5,014; women, 779). There were also 19 different master's degrees. By this multiplicity the distinctive character of the degree is lost; as a means of preserving the significance of their diplomas several universities have this year reduced the number of different degrees offered, following in this respect European models.

Concentration.—With regard to concentration it is interesting to note that there are 33 higher institutions having above 1,000 students each, and 42 that have endowment funds exceeding one million dollars. Of the total productive funds reported from the higher institutions for men and for both sexes, 38 per cent. is concentrated in five institutions; and of the entire income reported in 1910, 40 per cent. was received by 13 institutions, including the five most richly endowed. These are all universities and by their combination of collegiate and professional departments present great attractions to students, as indicated by the fact that they comprise one-fourth the entire student body. Inferior to these in wealth and in registered students, are a few additional universities which, like the former, have achieved enviable distinction abroad; hence it may be said that there are, at least, 20 centers of learning in this country of the highest order and universally regarded as national types.

ENTRANCE STANDARDS

The year has been marked by the adoption of measures on the part of several of the leading institutions which affect in some degree both higher and secondary education.

Harvard University has adopted a plan which admits an official statement from the secondary school as to the nature and extent of the candidate's course of study, with examination in four prescribed subjects, including two sets of optionals. The success of the plan seems assured by the fact that the proportion of incoming students from Western and Central states for the present session rose to 50 per cent., as against 20 per cent. last year.

Chicago.—The new plan of admission to Chicago University provides for greater flexibility in the preparatory course, but with rigid insistence upon 15 units of entrance work.

Yale University has made special announcement during the year of its opposition to any and all forms of certificate admission. At the same time the entrance requirements for the Sheffield Scientific School have

been somewhat modified, and it is understood that similar action will be taken in regard to the college requirements.

The certificate system of admission continues to be strongly indorsed by state universities, which, however, have long worked in agreement with the high schools of their respective states. The opinion expressed by President Faunce, of Brown University, in a recent report, that Eastern colleges must do the same "or lose their hold on national culture," has become general. It was expressed by the action of the New England colleges at their conference in Nov., 1910. At that time they adopted the recommendation that for college entrance, certificates be accepted "for quantity of work accomplished supplemented by examinations in *limited number of subjects as test of quality.*" Recently, however, an alarm has been sounded against mistaking vocational for cultural purposes. Throughout the country the leading institutions have taken a stand for idealism which makes the distinction between high and low degrees of civilization. Even universities, which, like Chicago, Wisconsin and California, admit vocational subjects in their entrance requirements, mark them low in the scale of values. (See XXXV. *Methods of Instruction in Latin and Greek.*)

NEW POLICIES IN THE SMALLER COLLEGES

The Amherst Plan.—The problem of the smaller colleges has been emphasized anew the present year by plans on the part of several for restricted but intensive work. The most conspicuous example of this action is that widely discussed as the Amherst plan, which provides for concentration upon a classical course with due combination of literary, historical and scientific branches. For the maintenance of this purpose it is decided to devote the resources of the college, so far as possible, to the increase of salaries. The number of students will be limited, and they will be admitted by a test of fitness for earnest work of the nature indicated.

Vassar College.—Among other signs of the same tendency is the announcement by the trustees of Vassar College that the postgraduate work will be discontinued and in its place scholarships will be offered, enabling graduates of marked ability to pursue advanced study and research in other institutions.

Religious Institutions. — Similar purpose is indicated in the movement by certain religious denominations for the suppression or fusion of their weaker colleges. The first step in this direction was taken by a conference held in Feb., 1911, in which representatives of the education boards of seven different denominations took part. At a second meeting held in April, two additional boards were represented, and an interdenominational committee was formed to devise plans for future action.

STANDARDIZING AGENCIES

The standardizing movement extends from the colleges upward through all degrees and orders of higher education, and commands at present the attention of many important bodies. Notable among these are: the joint associations of colleges and secondary schools organized in the different sections of the country; the Association of American Universities; the National Association of State Universities; the Carnegie Foundation for the Advancement of Teaching; the American Medical Association, and the state boards of health and state medical boards. The two last named have already effected a general advance in medical instruction through the authority conferred upon them to grant licenses for professional practice.

The efforts in this direction have been reinforced by the work of the specialist in the National Bureau of Education, who, from his position, approaches the subject in the spirit of complete detachment from personal or sectional interests. Thus, amid the bewildering increase of imperative demands, the year has been marked by distinct advance in directive and constructive activities in the field of higher education.

TENDENCIES AND DEMANDS

Agricultural Education.—Not less significant than these general movements is the current record of institutions as illustrating present tendencies and demands. The attendance upon the colleges of agriculture increased during the year by about 30 per cent. over that of 1910, and the buildings and equipments increased proportionately. The attendance at the one- and two-year courses and at the winter courses for farmers was unusually large, and the extension work of the colleges surpassed all previous records. Movable schools, educational trains and traveling experts are features of the extension work. (See XXII, *Agriculture.*) The demand upon these colleges for teachers of agriculture in the lower schools has called attention to their needs on the culture side. President Butterfield of the Massachusetts college announces for the coming year special courses in English grammar and composition and drill in the correct use of the native tongue. The idea has extended to other colleges of this class. The National Bureau of Education, which is charged with the distribution of the annual appropriation by Congress for the agricultural colleges, is aiding these efforts, and in particular seeks to raise the grade of the 17 agricultural colleges for negroes in the South. At the instance of the Federal Office, a special conference of the representatives of the latter colleges met at Columbus, Ohio, Nov. 15, at the time of the annual convention of the Association of American Agricutural Colleges and Experiment Stations. Plans for improving these colleges and freeing them from the strain of elementary instruction were discussed and arrangements made for the annual recurrence of the conference.

Technical institutions are expanding in the directions of art and science. The former relation is emphasized by the plans for a school of fine arts to supplement the remarkable group of technical schools at Pittsburg. In the large plans for the new era upon which it is entering the Massachusetts Institute of Technology is preparing also to meet more fully demands for the higher orders of scientific research as related to the technical professions. To this end President Maclaurin and several of his professors have made extended investigations during the summer in the methods and equipments of foreign polytechnics and scientific schools.

PROFESSIONAL EDUCATION

Professional education, like that of undergraduates, is carried on partly in independent institutions and partly in university departments; the tendency toward the latter relation is rapidly increasing with the advance of professional requirements and the consequent need for library and laboratory facilities.

The total number of students in professional schools of the United States in 1910 was 67,355. The classification of the schools and students was as follows:

Class.	Schools.	Instructors.	Students.	Increase or decrease.	Graduated in 1910.	Per cent graduated.
Theological	184	1,453	11,012	+ 794	1,759	16.0
Law	114	1,534	19,567	+1,015	4,233	21.6
Medical	135	7,586	21,394	— 764	4,448	20.8
Dental	53	1,546	6,439	+ 261	1,588	24.7
Pharmaceutical	79	815	6,226	+ 227	1,715	27.5
Veterinary	20	351	2,717	+ 40	769	28.3

With regard to previous education it appears that 28 per cent. of the theological students, 21 per cent. of the law students, and 8 per cent. of the medical students had obtained a college degree. About half the total number of professional students

were registered in university departments, whose property valuations, income, etc., are included with the general accounts of the respective institutions. It is therefore impossible to estimate the funds and material equipments at the service of professional education. The theological schools which are generally on an independent basis are well endowed. Their property valuation is in round numbers $19,000,000, and their endowment fund $34,500,000.

The affiliation of Andover Theological Seminary with Harvard University, which was perfected last year, illustrates the tendency already noted.

The advancing standard of medical education is a noticeable feature of the year's record. About one-half of the medical schools now require for admission the completion of one year or two years of a college course, and the medical course itself comprises four years of attendance. A large percentage of the graduates take a postgraduate year or two in a hospital, hence the importance of the intercorporate agreement between a great endowed hospital and the medical school of Columbia University, called by President Butler "the crowning event of the year."

As regards legal education it may be noted that at Western Reserve University (Franklin T. Backus School of Law) the degree of A.B. or B.S. was the entrance requirement for the first time the present year; twelve universities anounced the requirement of one or two years of the college course.

DISTINCTIVE CHARACTER OF UNIVERSITIES

State Universities.—The chief problems of higher education here considered, the problem of entrance requirements, of standards, and of expansion, illustrate the distinctive character of American universities. By reason of their dual function of liberal and specialized education, they are forced to work out the solution of the first two problems and at the same time to provide the funds, the material equipment, and the personnel that will enable them to measure up to the rapidly increasing demands of public and professional service. In this strenuous effort, state universities, like California, Minnesota, Wisconsin, Michigan, Illinois, and Cornell, to name those most liberally supported and most highly developed, have peculiar advantages in their organic relation to systems of public education, their endowment of public lands, and their annual share in legislative appropriations. These are practically inexhaustible resources and assure to the respective institutions annual incomes ranging from one and a half million to two and a half million dollars.

Eastern universities, on the contrary, depend for their incomes upon their accumulated endowments and the continued liberality of private donors, and for their student body upon the influence of their prestige and efficient administration. Hence the significance of the numerical signs of growth in any one of these older institutions. The desire for Harvard recognition is indicated by the outcome of the new degree of Associate of Arts announced last year for courses of study completed by non-resident students. In these extension courses 600 adult persons (400 women, 200 men) have already registered, one-third of the number being teachers.

The fall session has been marked by large registration in colleges and universities throughout the country. Columbia, New York, surpasses in this respect, having a total of 7,468 students increased to 8,000, if the extension courses be included.

Benefactions.—It is impossible to state for the past year the amount of gifts and bequests received by the higher institutions. In 1910, there were 27 institutions which reported under this head above $100,000 each and an aggregate of $13,100,000. Of this amount $7,500,000 went to five private universities. It is estimated that the total benefactions for higher education the past year will equal $18,000,000, with the same group of institutions at the head of the list. As regards service to the nation these are in fact public institutions and they want only

free tuition to be public in the same sense as the state universities. This feature, as pointed out by Governor Foss, in the case of Massachusetts, could be readily supplied, so far as really desirable, by a system of state scholarships.

INAUGURALS

Impressive as are these student enrollments, these large appropriations and princely endowments, there is a personal element in a university that appeals more strongly to the imagination. The factor was emphasized last year, by a succession of inaugural ceremonies of unusual interest. (See also *infra, New College Presidents.*)

The appointments to presidential vacancies have brought about a curious interchange of sectional influences. Dr. John C. Bowman, called to the presidency of the University of Iowa, although a native of the state, has intimate knowledge of the entire field through his experience as secretary to the Carnegie Foundation. The University of Alabama looked to Virginia for its new chief, Dr. George H. Denny, former president of Washington and Lee, Lexington, Va. More recent inaugurals have furnished striking proof of the interchange noted. Dr. Guy Potter Benton, installed as president of the University of Vermont, Oct. 6, and Dr. Lemuel Herbert Murlin, whose inauguration as president of Boston University was celebrated the 26th of the same month, bring to these eastern centers energies fostered in the free atmosphere of western institutions. The State University of Minnesota, a type of young life and splendid promise, calls to its leadership Dr. George Edgar Vincent, a graduate of Yale, familiar with the conventional forms of European and Oriental life, but nevertheless, a leader in the social reforms on which the hope of democracy is placed. As befitted the circumstances, the inaugural ceremony at Minnesota (Oct. 18) was marked by a rare combination of dignity and enthusiasm.

The inaugural ceremonies at Wellesley College, Oct. 16, and at the University of West Virginia, Nov. 3, were alike in the fact that both institutions drew their leaders from their own immediate circles. Miss Ellen Fitz Pendleton, the new president of Wellesley, is a graduate of the college, and has served it as professor, dean, and acting president. The University of West Virginia is the *alma mater* of its new chief, Thomas Edward Hodges, who has long been one of its valued councillors and trustees. Hence in these two instances there is no break in policies or purposes.

The last of these impressive ceremonies was the inauguration of Dr. Elmer E. Brown, called from the office of federal Commissioner of Education to be chancellor of the University of New York. This event, which took place Nov. 9, gives to another eastern institution a leader from the West eminently fitted by energy and experience for large enterprise. The University demands these qualities to maintain its past prestige and continued influence under the growing pressure of life in the metropolis and in the presence of such rivals as the College of the City of New York and Columbia.

In these ceremonies, conducted under varying titles, the recurring theme of the addresses and solemn charges, was that of the relation of universities to the state and of preparation for service in the spirit of justice and truth as the essential purpose of higher education.

CORRESPONDENCE SCHOOLS

Number.—Correspondence study courses are conducted by independent schools and by university departments. The former present great variety, both in regard to subjects and grades of instruction; the latter are generally more restricted in the range and number of courses offered. Altogether about 200 correspondence schools are in operation at the present time, several of which have had extraordinary success and enjoy national reputation as educational institutions.

International Correspondence Schools.—Among the most widely known institutions of this class are the International Correspondence Schools of Scranton, Pa. The work began in 1891 with a "complete coal-mining course," for which 500 students were enrolled; in 1910 the number of schools comprised in the system was 24, offering 229 courses. The rolls in Nov., 1910, showed a total registration of 1,334,234 students. According to a report presented on the occasion of the opening of the new administration building at Scranton, in the nineteen years of its operation, about $50,000,000 have been received for scholarships and $4,500,000 cash dividends have been paid to the stockholders. On an average, 100,000 scholarships are annually taken out.

The Home Correspondence School, Springfield, Mass., the strongest in New England, includes in its courses all subjects required for college-entrance examinations. It has a large registration of teachers, including 550 in its rural-school course. The civil service text-books of this school are used extensively in business colleges and evening schools. Its membership certificate covers two years' study.

Chicago Interstate School.—Chicago is the seat of two strong institutions of this class: the Chicago Interstate School and the American School of Correspondence. The former has directed its work in particular to the interests of teachers, who form about 95 per cent. of the students. Over 5,000 graduates have completed a full course of study.

The American School of Correspondence, which occupies a fine administrative building on Drexel Ave., Chicago, is particularly distinguished by its text-books on technical subjects. They are prepared by experts in the various departments represented, are kept fully up to date, and approved for class-room use in many of the leading universities and technical institutions of the country.

University Courses.—Chicago University was the first of our higher institutions to enter upon correspondence work, which appealed strongly to the organizing genius of Dr. Harper. The department was created in 1892-93, in which year 39 courses were maintained, with a total registration of 93 students. Last year the number of courses was 332, with a registration of 4,010 and a staff of 128 teachers. Under strict regulations, the University credits the work accomplished by the correspondent students toward the bachelor's degree. Scholarships covering cost of resident tuition are also offered to correspondent students upon specified conditions. The example of Chicago has been followed by at least ten state universities, all of which offer numerous courses specially adapted to teachers. The University of Wisconsin reëstablished its correspondence department in 1907, which has reached a registration of 4,400 students. Four of the state universities here referred to are included in a list of fifteen institutions recently published by the United States office of Experiment Stations, all of which offer correspondence courses in agriculture. Correspondence facilities for teachers are offered by several normal schools.

Religious Courses.—Courses in Bible study and religion, given in 1882 by the Boston Correspondence School, have multiplied past the hundred mark. Several religious denominations have adopted the plan as a means of extending Bible and ethical instruction. The Methodist Episcopal Church, South, has placed the work with Vanderbilt University.

Railroad Schools.—In 1909 the Union Pacific Railroad established an educational bureau at Omaha, which included among other functions, that of a correspondence school. The courses of instruction provided pertain strictly to the practical work of the railroad, not excluding, however, the essential branches of a general education. The service of the school is free to all employees of the road, and it is estimated that one out of every eight employees throughout its vast extent is enrolled in some one of the courses thus freely offered. The example of the Union Pacific has been followed by the Illinois Central and the Yazoo and Mississippi Valley Railroad Companies,

which opened an educational bureau in Chicago the present year with study courses free to all employees of their system. The Utica School of Railway Signaling is the only correspondence-study school devoted entirely to that important branch. It issues two courses and has an advisory board representing some 15 different railroads.

Among other strictly vocational courses conducted by correspondence, are those maintained by the International Typographical Union and the International Printing and Pressmen.

The varied adaptabilities of this popular agency are indicated by the correspondence courses for the blind recently instituted by the Illinois School for the Blind, and by the courses maintained by the Bancroft Training School, Haddonfield, N. J., for the home instruction of abnormal children and for teachers interested in the work. The Prang Company for Art Industry Education has just started a non-resident course in drawing under the directorship of Prof. Henry T. Bailey. The course with one-year resident study secures the diploma of a two years' course.

SCHOOLS FOR SPECIAL CLASSES

Blind, Deaf and Dumb.—Large provision is made in this country for the education and training of young people who are defective either physically or mentally. For the blind there are 48 state schools having a force of 531 instructors and 4,323 pupils. The schools for the deaf and dumb number 130, with an aggregate enrollment of 12,546 pupils. Of the total number, 57 are state schools, with a teaching force of 189 and an enrollment of 10,399 pupils; 53 are public day schools with 1,500 pupils, and 20 are private schools.

Feeble-minded.—The public institutions for the training of the feeble-minded, aim to render them self-supporting in whole or in part. There are 20 state schools of this order, with 270 instructors and 12,100 pupils, and 16 private institutions with 70 teachers and 700 students. The state schools are maintained at an annual expenditure of about $4,000,000, and the private institutions at an expenditure of $251,577. The New Jersey Training School for the Feeble-Minded, at Vineland, is noted for its investigations into the causes of arrested development, and for scientific methods which are attracting world-wide attention. (See XVII, *Prevention, Correction and Charity.*)

Reform Schools.—Reform schools for wayward children number 115, with 57,000 youthful inmates. These institutions are regarded as protective rather than reformatory, their purpose being to fortify their youthful inmates against innate perverted tendencies or to rescue them from degrading influences.

RACE EDUCATION

The Negro Population.—The responsibility for race education rests heavily upon the United States, both in its outlying possessions and within its borders. It confronts the nation in the immigrant population of commercial and industrial cities, in the mixed populations of newly admitted states, and more urgently in the negro population of the South. Of 9,600,000 children of school age (5 to 18) in that section, nearly one-third are colored; their enrollment in the public schools steadily increases, comprising last year 1,720,000 children, or one-fourth the entire enrollment. The number of teachers employed in the colored schools was 30,334, about one-fifth the total number of teachers in all the public schools of the South. The number of high schools included in the estimates was 142; they employed 473 teachers and enrolled 8,251 advanced pupils as against 383 teachers and 6,806 pupils the preceding year. There were also 189 private or semi-private institutions for the colored race, having 58,-

000 students and 2,940 teachers. Many of these schools are well equipped with libraries and scientific apparatus. Their property valuation is $14,330,000 and their annual expenditure amounts to $3,100,000, met by tuition fees, benefactions and public appropriations.

Institutions for Higher Education.—It is in these higher seminaries that the solution of this racial problem is being worked out, not only for this nation, but for other nations to which the intellectual and industrial capabilities of the African have become matters of concern. Hampton and Tuskegee are institutions of world-wide importance. At Tuskegee the principles originally developed at Hampton are applied under conditions not unlike those of unorganized society, and hence the efforts at the latter are more directly aimed at community development through industrial efficiency. This purpose is indicated by the unique character of the commencement exercises, which make an annual holiday for the negro farmers from that part of the black belt of Alabama. Last year more than 5,000 assembled, exceeding all previous gatherings. The institute was in full working order so that the visitors might spend an actual day at the school. Every kind of practical work included in its course was in operation and its 35 extension activities were represented by graphic illustrations. The agricultural department made a separate exhibit in an immense booth erected for the purpose. Here throughout the day improved implements and processes were explained to interested farmers and dairymen.

Several of the higher institutions for the colored people, such as Howard and Atlanta Universities, follow more closely the traditional course and methods of training, and prepare teachers, doctors and ministers for service among the colored people. For these students industrial training is provided as a means of increasing their practical usefulness. It will readily be seen that the supply of graduates is far below the demands of the 9,000,000 colored people in the United States. Of the 189 higher institutions referred to, only 13 have no preparatory department, and with three exceptions these have large secondary departments. The total number of students in the collegiate and professional departments last year was less than 6,000.

Summer Schools.—A unique institution for the colored people is the summer school and Chautauqua at Durham, North Carolina, which held its second session in August, with great success. The usual teacher training courses of summer schools are here supplemented by special training for the preacher, the missionary and the social worker. The attitude of the white people of the town, who have cordially supported the work for its bearing upon the general welfare of the entire community, marks Durham as the center of a new movement in racial education.

Conferences.—At the sixteenth annual conference held at Atlanta University the last week in May, the subject for consideration was "The Negro and the Public School," following an investigation carried out under the supervision of Director W. E. B. Dubois, Ph.D. This conference follows the plan of a social study of the negro American by means of an annual series of decennially recurring subjects, the studies being carried on under the department of sociology in Atlanta University. For the past four years the work has been maintained with the aid of the John F. Slater fund. The subject of investigation last year, the report of which has recently been issued, was "The College-Bred Negro."

The national importance of the negro problem was earnestly considered in the conference at Hampton which occurred this July 19-20, following by a few months the 43d annual commencement of this notable institution.

At the Tuskegee conference, which is dominated by the practical spirit of Booker T. Washington, the keynote was the industrial status and opportunities of the American negro.

Alaskans.—The Bureau of Education has direct charge of the schools for natives in Alaska and is conducting there an important experiment, in the education of a primitive people

of different races, scattered over widely varying regions of a vast territory, and all more or less affected by their contact with civilization. In addition to teaching the children in schools, whole communities must be elevated. To this end practical instruction is given in fundamental industries, in sanitation, in thrift and morality. Special provision is made for the physical welfare of the natives by employing physicians, and by furnishing medical textbooks and medicines to the teachers in order that they may be able to cure minor ailments. Two hospitals are under contract to care for diseased natives upon the application of superintendents or teachers.

During the fiscal year 1909-10 the field force in Alaska consisted of 5 superintendents, 98 teachers, 10 physicians (5 of whom also fill other positions in the Alaska school service), 3 nurses, and 8 contract physicians. Seventy-seven United States public schools for natives were maintained with an enrollment of 3,064 pupils and an average attendance of 1,692.

Indians.—The government system of education for Indians is under the charge of Hon. R. G. Valentine, Commissioner of Indian Affairs, who reports that the system extends into 26 states and, in a sense, includes the entire Indian population, since the instruction of children and youth in schools is supplemented by practical efforts for the promotion of the social and industrial welfare of the adults. The Indian population is being gradually fused into the life of the respective commonwealths, and present efforts are directed to fitting the Indian schools for final absorption in the state systems. Manual and industrial training is a marked feature of 74 schools, which report a total of 1,121 teachers (467 male, 654 female) and 15,428 pupils (8,301 male, 7,127 female). The system of supervision of the reservation schools has been recently reorganized and provision made for a more effective service of medical and sanitary inspection.

Hawaii.—Among the outlying possessions of the United States Hawaii alone has the status of a territory. The official reports of education in this group of islands show steady gain in the enrollment in public schools, which reached a total of 25,770, an increase of 66 per cent. in 10 years. An interesting fact in the record is the change of nationality in the pupils. The number of Hawaiian children is declining; of part Hawaiians increasing. The number of Japanese children at school rose from 1,352 to 7,262 in 1910, a gain of 437 per cent. Meanwhile the children of American, British and German parentage are turning more and more to private schools. A marked change is also taking place in the nationality of public-school teachers. Those of native ancestry, pure or partial, are in a large number of cases replacing teachers from the United States.

Porto Rico.—In the ten years of American occupation, the enrollment in public schools of Porto Rico has more than quadrupled, rising from 24,392 to 121,453. Daily average attendance increased in the same time from 20,000 to 84,200, a gain of 300 per cent. A force of 1,697 teachers is engaged in the schools and the expense per capita of average attendance is $14.00. Marked progress has been made by the pupils in the mastery of elementary branches, including agriculture and domestic arts, and a system of government scholarships has been established by means of which children of marked ability may proceed from the island schools to some one of the universities of the United States for the completion of their training.

The Philippines.—The American public school is making rapid progress in the Philippines. The number of schools reported is 4,500 with a force of 9,000 teachers, an enrollment of 587,317 pupils and an average monthly attendance of 337,307. The progress of the Filipino children in the mastery of English is phenomenal, and a system of vocational training based in part upon native industries has been developed, which is attracting wide attention by its methods, and the adaptations and progressive sequence of its exercises. (See also XII, *Territories and Dependencies.*)

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NEW COLLEGE PRESIDENTS

MARCUS BENJAMIN

During the year a number of colleges have called to their highest offices new men to care for the education of the youth committed to their charge. Among the more important of these are the following:

University of Vermont.—The vacancy caused by the death of Matthew H. Buckham, who since 1871 had been president of the University of Vermont and the State Agricultural College, was filled by the election of Guy Potter Benton, who was born in Kenton, Ohio, in 1865, and was graduated from Baker University. President Benton has devoted his life to education, and after serving as superintendent of schools in Kansas, he returned to Baker, where he held the chair of history and sociology during 1896-9. Meanwhile he studied for the ministry and was ordained in the Methodist Episcopal Church. He became president of Upper Iowa University in 1899 and since 1902 was similarly

connected with Miami University. His induction to the presidency of Vermont took place on Oct. 16.

Boston University.—Lemuel Herbert Murlin, who was born in Mercer County, Ohio, in 1861, and after holding various pastorates in the Methodist Church, accepted the presidency of Baker University in 1894, was called in April to the presidency of Boston University. He was inaugurated on Oct. 20.

Wellesley College.—This institution inducted to office as its new president on Oct. 19, Miss Ellen Fitz Pendleton, who graduated from Wellesley in 1886 and who, subsequent to 1901, was associate professor of mathematics and dean of the college.

Worcester Polytechnic Institute.—Edmund A. Engler, who had filled the presidency of the Worcester Polytechnic Institute since July 1, 1909, resigned at the close of the college year, and Levi Leonard Conant, who was born in Littleton, Mass., in 1857, and since 1891 had held the chair of mathematics in the Institute, was at once called to the Acting Presidency.

New York University.—The long and valuable service of Chancellor MacCracken to the New York University, which began in 1884, came to an end by his retirement at the close of the college year in June, and Elmer Ellsworth Brown was at once invited to succeed him. This distinguished educator was born in Kiantone, New York, in 1861, and was graduated at the Illinois State Normal University in 1881. After a period of foreign study he was graduated at the University of Michigan in 1889. He taught variously until 1891 when he was called to the chair of science and art of teaching in the University of Michigan. The following year he accepted the corresponding chair at the University of California, where he remained until 1906, when he was appointed U. S. Commissioner of Education, resigning that important office to accept the call to the New York University. Chancellor Brown has contributed largely by papers, reports, addresses, and books to the literature of his profession. His induction to office took place on Nov. 9.

Dickinson College.—This college in June called Eugene Allen Noble to its presidency in succession to George E. Reed. President Noble was born in Brooklyn, N. Y., in 1865, and was educated at Wesleyan, where he received the degree of Ph.D. in 1891. After ordination in the ministry of the Methodist Episcopal Church, he held pastorates in various places, and since 1908 he had been president of the Woman's College of Baltimore.

Franklin College.—To the presidency of this college, located in Franklin, Ind., Dr. E. A. Hanley of Providence, R. I., has been called.

University of Minnesota.—In succession to Cyrus Northrop, president of this university since 1884, George Edgar Vincent was called and entered on his duties on April 1. President Vincent was born in Rockford, Ills., in 1865, and was graduated at Yale in 1885. He became connected with the University of Chicago in 1892, and after various promotions was, from 1907 until his call to Minnesota, dean of the faculties of arts, literature, and science.

Iowa State University.—John Gabbert Bowman, who was born in Davenport, Iowa, in 1877, and was graduated at the Iowa State University in 1899, after which he taught, then did newspaper work, was instructor at Columbia, and since 1906 acted as secretary of the Carnegie Foundation, accepted in March the presidency of his alma mater in succession to George E. Maclean.

West Virginia University.—This University has called to its presidency Thomas Edward Hodges in succession to David B. Purinton. President Hodges was graduated at West Virginia in 1881 and then became principal of the public schools in Morgantown. From 1886 to 1896 he taught natural science and pedagogy in Marshall College State Normal School and then was called to the Chair of Physics in his alma mater, which place he held until his election to the presidency. His installation took place on Nov. 2, 1911.

Gallaudet College.—After continuous service from 1857 to 1911, Edward M. Gallaudet, the foremost educator of the deaf in this country, yielded the presidency of the Colum-

bia Institution for the Deaf, better known as Gallaudet College, to Percival Hall, who was born in Washington, D. C., in 1872, and graduated from Harvard in 1892. President Hall began his teaching career in 1893 at the New York Institution for the Deaf, but since 1895 he has been connected with Gallaudet, chiefly as professor of applied mathematics and pedagogy. He was inducted to office on May 10, 1911.

University of Alabama.—The presidency of this institution has been accepted by George Hutchison Denny, who had been connected with Washington and Lee University since 1899 and since 1901 as its president, in succession to John W. Abercrombie, who retired in June.

Dalhousie University.— In July, Arthur Stanley Mackenzie was appointed president of Dalhousie University, Halifax, N. S. President Mackenzie was born in Pictou, N. S., in 1865, and was graduated at Dalhousie in 1885. He taught mathematics at his alma mater and then studied at Johns Hopkins, where, in 1894 he received the degree of Ph.D. During 1891-1905 he was professor of physics at Bryn Mawr, then at Dalhousie again in 1905-10, and at Stevens Institute of Technology thereafter until he resigned to accept the presidency of his own college.

LIBRARIES

ARTHUR E. BOSTWICK

Tendencies.—Speaking broadly, there are two noteworthy trends in American library work—that toward emphasizing the library's position as an educational institution, and that toward improving its connection with the world of affairs. Under the first head we have the establishment of additional training agencies, either separate or in connection with some existing school or university, the establishment of courses in normal schools to prepare prospective teachers for giving instruction in the use of books and libraries, widespread cooperation with educational institutions, increased care in guiding the reading of both children and adults, the establishment of lecture courses and study clubs in library buildings, and the entrance of libraries into various forms of social-service or neighborhood work. The more careful preparation of lists and bibliographies, and their direction toward the production of an educational effect, both by selection of titles and their annotation, has also been noteworthy.

Under the second head we have the recognition by the library that many of the rules applicable to commercial institutions do and should apply to it also; efforts to improve financial and administrative methods, for the increase of efficiency; the multiplication of special libraries maintained by commercial and industrial institutions and of technological or industrial departments or branches in great public libraries; the increased amount of work as a bureau of information done by the reference department, as well as efforts to increase informational reading among business men and to call to their attention the facilities of the public library in this direction.

Some libraries show both these trends strongly; others only one or neither. Both have been carried to extremes, and both have been deprecated by librarians of influence as likely to lead to one-sided and faddish development. There can be little doubt, however, that library progress in the near future is to proceed conservatively in both these directions.

Necrology.—The profession has lost by death Frederick Morgan Crunden, Librarian of the St. Louis Public Library from 1877 to 1909 (Oct. 28); Sam Walter Foss, of Somerville, Mass., also well known as a poet (Feb. 26); James Lyman Whitney, chief of the department of documents and statistics of the Boston Public Library, and for some time its librarian (Sept. 25, 1910); his brother, Henry Mitchell Whitney, librarian of the Blackstone Memorial Library, Branford, Conn. (March

26); George Hall Baker, librarian emeritus of Columbia University, New York City (March 27); Irene Gibson, assistant in the Library of Congress (July 9); Mary W. Taylor, librarian of the U. S. Bureau of Chemistry (Dec. 13, 1910); and Edward W. Hall, librarian of Colby College (Sept. 8, 1910).

Appointments.— Noteworthy changes are the transfer of Drew B. Hall from Fairhaven to Somerville, Mass., to fill Mr. Foss's place; the acceptance by Purd B. Wright, of Los Angeles, of the librarianship of the Kansas City Public Library; the appointment of Everett Perry of the New York Public Library as librarian at Los Angeles; the retirement of Chalmers Hadley from the secretaryship of the American Library Association, with charge of its headquarters at Chicago, to accept the librarianship of the Denver Public Library, vacated by the retirement of Charles R. Dudley; the resignation of George B. Utley from the Jacksonville, Fla., Public Library to assume the A. L. A. secretaryship; and the transfer of William P. Cutter from the Forbes Library, Northampton, Mass., to take charge of the Engineering Societies' Library in New York City. Miss Frances Jenkins Olcott, for many years head of the children's department of the Carnegie Library of Pittsburg, and Director of its Training School for Children's Librarians, resigned her position in June. It has been filled by the promotion of Miss Sarah C. N. Bogle of the East Liberty Branch Library.

Schools.—In June it was announced that Andrew Carnegie had guaranteed to the New York Public Library the sum of $15,000 annually for five years to establish and support a library school, and that Mary W. Plummer, long director of the Pratt Institute Library School, had accepted the directorship. The new school opened Oct. 2 with 38 pupils. The training class formerly operated by the New York Public Library was discontinued. Miss Plummer's place in the Pratt School was filled by making the librarian, Edwin F. Stevens, director, and Miss Josephine A. Rathbone vice-director with immediate charge of the school. Among other noteworthy events were the establishment of a state summer school in Missouri, under the auspices of the Library Commission, whose first session was held in St. Louis with the coöperation of the Public Library of that city; and the requirement by the Illinois University School of a B.A. degree for future admission, making it one of the small number of purely graduate institutions.

Buildings.—The new building of the New York Public Library was opened for public use May 23. This is the most costly library structure in the world and was erected for the library's use by the city of New York at a cost approaching $10,000,000. The new St. Louis library building, one of the finest in the West, approaches completion, and plans are under way for a new central building in Detroit, Mich.

The New Bedford Public Library, occupying the old City Hall, expressly remodeled for its use, was opened to the public in its new quarters in Dec., 1910. The reconstruction of the building for library purposes is remarkably successful.

A fine new library building for the University of California, at Berkeley, Cal., was completed and occupied in June.

The New York State Library at Albany was almost totally destroyed on March 29 by a fire that seriously damaged all that part of the Capitol building in which the library was situated. Of the collection of books, ranking fifth or sixth among all those in the country, and within the first 20 in the world, including more than a million books, pamphlets and manuscripts, only about 10,000 volumes were saved, with a few of the pamphlets and about one-third of the manuscripts. The new education building, to which the library was to have been removed, was closely nearing completion at the time of the fire. The successive directors of the library had more than once pointed out the great danger of its destruction by fire, owing to the overloading of the old quarters with combustible temporary shelving and other material.

Associations and Conferences.—

The American Library Association held its 23d annual conference at Pasadena, Cal., May 18-24, with a total registered attendance of 582. This was the first meeting in California in 20 years. After the week of the conference a large party of librarians from the East proceeded up the coast as far as San Francisco by special train, visiting local libraries on the way. Owing to the enforced absence of President J. I. Wyer, Jr., and of both the vice-presidents, the sessions were taken in charge by the following ex-presidents of the association, presiding in turn: Frank P. Hill, of Brooklyn; Clement W. Andrews, of Chicago; Henry T. Carr, of Scranton, and Arthur E. Bostwick, of St. Louis; and by one ex-vice-president, Miss Alice S. Tyler, of Iowa. Among the features of the conference were an interesting discussion of library administration, especially of municipal civil service as it affects libraries; valuable committee reports on administration, coördination, and bookbinding; papers on the county library systems now being introduced in the West, and public addresses by Governor Johnson, of California, George Wharton James, Lincoln Steffens, and others.

The association recommended that some form of connection or federation between the various state associations and the national association be adopted, and it approved the application of the Special Libraries Association for affiliation. It appointed a committee to promote and coöperate in the development of printed catalogue cards in relation with international arrangements, approved the publication of a *Municipal Year Book* and the reciprocal exchange of public documents between the United States and Canada, and adopted a resolution of protest against the "return of state librarianships or other positions to the spoils system." It was ordered that a copy of this resolution be sent to the governor of Ohio, and it is generally understood that it referred to the recent displacement of State Librarian Charles B. Ealbreath of that state, after fifteen years of service, and the appointment of a successor without library experience.

Officers elected for the ensuing year were: President, Mrs. H. L. Elmendorf, Vice Librarian of the Buffalo Public Library, the first woman ever chosen to this post; Vice-presidents, Henry E. Legler, Librarian of the Chicago Public Library, and Miss Mary W. Plummer, Director of the New York Public Library School. The secretary, George B. Utley, and the treasurer, Carl B. Roden, Assistant Librarian of the Chicago Public Library, continue to serve, being appointees of the Executive Board. It was decided to hold the next conference at Ottawa, Can., provided proper accommodations could be secured. The Proceedings of the Pasadena meeting are obtainable in the July number of the Association's *Bulletin* (Chicago, 1911).

Two meetings of the American Library Institute were held during the year, one at Pasadena, at the time of the A. L. A. conference, the other, in two sessions, Sept. 27-8, in New York during the State Library Association meeting. For the latter meeting the papers, as far as they could be obtained, were printed in advance and not read at the sessions.

The usual annual conventions were held by the various state associations. Among those of special interest were the 15th annual Pennsylvania-New Jersey bi-state meeting at Atlantic City, N. J., March 10-11, the Ohio-Michigan meeting at Cedar Point, Ohio, Sept. 2-8, and the New York State meeting in New York City, Sept. 25-30. At this same time meetings of the American Library Institute and the Special Libraries Association were held in the same city.

Another noteworthy meeting was that of the League of Library Commissions, held at Chicago, Jan. 3-4. At the same place were also held meetings of the A. L. A. Council (Jan. 6) and the Special Libraries Association (Jan. 5), a conference of library-school instructors, and a meeting of the college and university librarians of the Middle West, bringing together a large gathering of librarians.

A new departure was the two weeks' summer conference held in

Madison, Wis., July 12-26, by the Wisconsin Library Commissioners, in place of the usual summer library class. This was probably the longest library conference, with the fullest program, ever held.

Bibliography.— The seventh and latest revision of Melvil Dewey's decimal classification made its appearance in August. Some of the classes remain practically as they were in the last edition, while others have been greatly expanded, making the classification much more minute and detailed in certain directions, notable among which are Library Economy, Engineering, and Domestic Economy.

John C. Dana's *Modern American Library Economy, as illustrated by the Newark (N. J.) Free Public Library* continues to appear in parts, those published in 1911 being the first section of Part V, on "The School Department Room," and Part III, on "The Business Branch."

The *Manual of Library Economy*, which has been in preparation by the A. L. A. Publishing Board for several years, has begun to appear in parts, the following chapters having been thus issued during the year: "American Library History," by C. K. Bolton; "The Library of Congress," by W. W. Bishop; "The College and University Library," by J. I. Wyer, Jr.; "Order and Accessions Department," by F. F. Hopper; "Reference Department," by E. C. Richardson; "Bookbinding," by A. L. Bailey; "The Shelf Department," by Josephine A. Rathbone; and "Branch Libraries and Other Distributing Agencies," by Linda A. Eastman.

Other important issues by the Publishing Board are: The third edition of the A. L. A. *List of Subject Headings for Use in Dictionary Catalogues*, by Mary J. Briggs of the Buffalo Public Library; *List of Editions Selected for Economy in Bookbuying*, by Le Roy Jeffers of the New York Public Library; *550 Children's Books, a Purchase List for Public Libraries*, compiled by Harriet H. Stanley; Supplement, 1910-11, to Kroeger's *Guide to the Study and Use of Reference Books*, compiled by Isadore G. Mudge of Columbia University Library; and a new revised edition of *Hints to Small Libraries* by Mary W. Plummer. The Publishing Board of the A. L. A. has also taken over the publications of the League of Library commissions.

XXXVII. CHRONOLOGY AND NECROLOGY

(NOTE: An extensive chronological record of events affecting international relations, the conclusion of international treaties and agreements, and international congresses, conferences and expositions, will be found under V, *International Relations.*)

AMERICAN CHRONOLOGY

JANUARY

2.—The Iowa Railroad Commission orders a reduction of express rates of 5 to 20 per cent.

3.—The Supreme Court dismisses the government's Panama Canal libel suit against the New York *World.*

4.—The government brings action under the Sherman law to dissolve the Atlantic steamship combine.

5.—Both Houses of Congress reassemble after the holiday recess.

7.—Oscar S. Straus resigns as Ambassador to Turkey; W. W. Rockhill is appointed his successor.

The Carnegie Trust Co., of New York, is closed by the state banking officials.

8.—Gov. Glasscock announces the interim appointment of Davis Elkins to succeed his father in the Senate.

9.—The minority report on the Lorimer case is presented in the Senate by Mr. Beveridge.

10.—The House passes the Sulloway Pension bill, adding $45,000,000 annually to the pension roll.

A treaty is concluded by which the United States guarantees a loan to Honduras without assuming a financial protectorate.

Pres. Taft orders a public reprimand for Comdr. Sims, U. S. N., for the indiscretion of his London speech.

Senators are elected: Ohio, Lieut.-Gov. Atlee Pomerene (Dem.); and Cal., Judge John D. Works (Rep.).

11.—The Committee on Judiciary, through Senator Borah, reports in favor of an amendment to the Constitution providing for the election of Senators by direct vote.

12.—Pres. Taft, in a special message, asks for $5,000,000 to begin the fortification of the Panama Canal.

14.—The State Department announces complete agreement with Canada on the fisheries question.

U. S. battleship *Arkansas* is launched.

15.—The United States protests to Guatemala against alleged support of the Honduras revolutionary movement.

17.—The Aldrich plan for financial reform is made public by the National Monetary Commission.

Senators are elected: Me., Chas. F. Johnson (Dem.); Mo., Jas. A. Reed (Dem.); Conn., George P. McLean (Rep.); Neb., Gilbert M. Hitchcock (Dem.); N. D., Porter J. McCumber (Rep.) and A. J. Gronna (Rep.); Minn., Moses E. Clapp (Rep.); and Utah, George A. Sutherland (Rep.).

An explosion in the boiler room of the battleship *Delaware* kills eight men.

18.—Senators are elected: R. I., Henry F. Lippitt (Rep.); Mich., Chas. E. Townsend (Rep.); Wash., Miles Poindexter (Rep.); Ind., John W. Kern (Dem.); Mass., Henry Cabot Lodge (Rep.); and Ala., John H. Bankhead (Dem.).

19.—Champ Clark is chosen Speaker of the House for the 62nd Congress, and the appointment of committees is referred to the Ways and Means Committee.

20.—A reciprocity agreement is reached between the United States and Canadian commissioners.

Andrew Carnegie makes an additional gift of $10,000,000 to the Carnegie Institution at Washington.

21.—New Mexico ratifies the proposed state constitution by a majority of 18,000.

23.—The Republican Progressive League is organized.

Luke Lea (Ind. Dem.) is elected U. S. Senator from Tennessee.

24.—George S. Nixon (Rep.) is re-elected to the U. S. Senate from Nevada.

25.—Four troops of U. S. cavalry sent to points on the Rio Grande to preserve neutrality in the Mexican revolution.

Benj. W. Hooper (Rep.) is inaugurated Governor of Tennessee.

Senators are elected: N. J., Jas. E.

Martine (Dem.); Wis., Robt. M. La Follette (Rep.); Del., Henry A. du Pont (Rep.); Wyo., Clarence D. Clark; and Tex., Chas. A. Culberson (Dem.).

26.—The reciprocity agreement is submitted to Congress and to the Canadian Parliament.

28.—The Canadian Reciprocity bill is introduced in the House.

The Diamond Match Co. agrees to the cancellation of its patent for a substitute for poisonous white phosphorus.

29.—Pres. Alfaro, of Ecuador, is forced to abandon the plan to lease the Galapagos Islands to the United States for a naval station.

30.—The House passes the bill creating a permanent tariff board.

Seven hundred persons perish in Luzon from an eruption of Mount Taal, accompanied by a tidal wave and earthquakes.

31.—The House votes in favor of San Francisco's claim to the Panama Canal Exposition.

FEBRUARY

1.—The West Virginia legislature elects to the Senate Wm. E. Chilton (Dem.) and Clarence W. Watson (Dem.).

Several tons of dynamite and black powder explode at the Communipaw, N. J., terminal of the Central Railroad of N. J., with great destruction of life and property.

3.—Pres. Taft tenders the services of the United States in restoring peace in Honduras.

The Philippine Assembly adjourns.

7.—The House passes the Lowden bill appropriating annually $500,000 for the purchase of embassy buildings abroad.

Mayor Gill, of Seattle, is "recalled" at a special election, and George W. Dilling substituted.

9.—The House passes the Crumpacker reapportionment bill, increasing its membership to 433.

Arizona ratifies the proposed state constitution.

Count Albert Apponyi, of Hungary, addresses the House of Representatives.

11.—The House resolution giving the Panama Canal Exposition to San Francisco is approved by the Senate.

13.—John Hays Hammond is named special ambassador to the coronation of King George V.

14.—The Canadian Reciprocity bill passes the House by a vote of 221 to 92.

15.—The Senate ratifies the Hague convention creating an international prize court, and passes the "Appalachian Forest Reserve Act."

The signing of contracts for a $7,500,000 American loan to Honduras is announced.

21.—The United States protests against the general execution of Haytian revolutionists.

23.—Proposed increases in freight rates on the railroads of the East and the Middle West are disallowed by the Interstate Commerce Commission.

24.—The Senate ratifies the new treaty with Japan, which eliminates restrictions on immigration.

28.—The resolution providing for the election of Senators by popular vote fails to obtain a two-thirds majority in the Senate.

MARCH

1.—The New Mexico constitution is approved by the House.

The Senate refuses to unseat Mr. Lorimer by a vote of 46 to 40.

Henry S. Boutell is appointed minister to Portugal.

2.—Henry L. Myers (Dem.) is elected to the Senate by the Montana legislature after a two-months' deadlock.

3.—The House, passing the bill retiring Robert E. Peary with the rank of Rear-Admiral, extends to him the thanks of Congress.

The Government's suit to dissolve the "Electrical Trust" is begun at Cleveland.

Gov. Dix, of New York, appoints a commission to investigate the extension of the docking facilities of New York City.

4.—The Tariff Board bill is passed by the Senate.

The Sixty-first Congress ends.

A special session of the Sixty-second Congress is called for April 4.

5.—Chas. D. Hilles is appointed Secretary to the President.

7.—Richard A. Ballinger resigns as Secretary of the Interior; Walter L. Fisher is appointed his successor.

Twenty thousand troops and 15 warships are ordered to points near the Mexican border.

8.—Pres. Taft disclaims intention to use the troops concentrated on the Mexican border to occupy Mexican territory.

9.—The village of Pleasant Prairie, Wis., is destroyed and 40 persons killed by a powder explosion at the works of the Laffin Rand Powder Co.

11.—Maj.-Gen. Carter assumes command of the troops at San Antonio, Tex.

14.—Walter L. Fisher is sworn in as Secretary of the Interior.

18.—The Roosevelt storage dam in Arizona is formally opened.

24.—The New York Court of Appeals declares unconstitutional the workmen's compensation law.

25.—A factory fire near Washington

Square, New York, results in the death of 145 persons.

29.—The New York State capitol, Albany, is partially destroyed by fire.

31.—Jas. A. O'Gorman (Dem.) is elected Senator from New York, after a legislative deadlock of 10 weeks.

APRIL

3.—The Supreme Court holds that under the "commodities clause" of the Hepburn Act the railroads must be actually independent of the coal companies.

4.—The Sixty-second Congress meets in special session; Champ Clark is elected Speaker of the House.

The commercial treaty between Japan and the United States is ratified at Tokio.

5.—The code of rules reported by the Committee on Rules is adopted by the House without amendment.

6.—Senator La Follette (Rep., Wis.) introduces a resolution calling for another investigation of the Lorimer election.

The North German Lloyd liner *Prinzess Irene* grounds off the Long Island coast.

7.—Thos. S. Martin (Dem., Va.) is chosen minority leader in the Senate.

A fire in the Pancoast Colliery, Scranton, Pa., causes the death of 73 men and boys.

8.—An explosion in the Banner mine, Littleton, Ala., causes the death of 128 miners, nearly all convicts.

The Minnesota rate case is decided in favor of the railroads.

10.—The decision in the Danbury hat case, assessing a boycotting union $232,000 damages, is reversed by the U. S. Court of Appeals.

The Court of Customs Appeals affirms the right of the Government to enter into reciprocal tariff arrangements with Canada.

12.—The Canadian reciprocity bill and the "farmers' free list" bill are introduced in the House.

Wm. S. Kenyon (Rep.) is elected to the U. S. Senate from Iowa.

13.—The House passes a bill providing for direct election of senators without federal control.

The Supreme Court affirms the constitutionality of the corporation tax.

14.—The Rucker bill providing for publicity of campaign contributions before and after national elections passes the House.

David Jayne Hill's resignation as Ambassador to Germany is announced.

Pres. Taft warns the Mexican government that the lives of Americans must not be endangered by fighting close to the border.

15.—Pres. Taft orders the Sixth Cavalry to Arizona to protect property on the Mexican border.

17.—Residents of Douglas, Ariz., are wounded by bullets from an engagement between Mexican troops and insurgents.

18.—The Mexican government promises restriction of fighting along the Mexican border.

19.—The completed portion of the Cathedral of St. John the Divine, New York, is consecrated.

21.—The Canadian reciprocity bill passes the House by a vote of 266 to 89.

22.—John J. McNamara, secretary and treasurer of the International Association of Bridge and Structural Iron Workers, is arrested, charged with responsibility for the dynamiting of the Los Angeles *Times* building, Oct., 1910.

24.—Dr. Elmer E. Brown, U. S. Commissioner of Education, is chosen chancellor of New York University.

27.—The House passes the reapportionment bill.

28.—Capt. John A. Gibbons is appointed superintendent of the U. S. Naval Academy, Annapolis.

30.—Fire destroys about one-third of Bangor, Me.

MAY

1.—The Supreme Court decides that forest reserves are controlled by the federal government, and not by the state governments.

The Lehigh Valley, N. Y., O. & W., and D. & H. railroads decide to sell their coal properties.

Chas. H. Hyde, Chamberlain of the City of New York, is indicted by a grand jury on the charge of accepting bribes.

2.—A grand jury at Columbus begins an investigation of corruption in the Ohio legislature.

Horatio W. Parker and Brian Hooker are awarded the $10,000 prize for an American opera offered by the Metropolitan Opera Co.

8.—By a vote of 236 to 109, the House passes the Farmers' Free List bill.

9.—Resolutions to investigate the Post Office Department and the Sugar Trust are passed by the House.

12.—Henry L. Stimson is appointed Secretary of War to succeed Jacob M. Dickinson, resigned.

15.—The Supreme Court orders the dissolution of the Standard Oil Co., judging it to be a combination in restraint of trade.

The Supreme Court sets aside the sentences of imprisonment for contempt imposed upon Gompers, Mitchell, and Morrison, of the American Federation of Labor.

16.—A resolution providing for an investigation of the Steel Trust is passed by the House.

17.—The German-American conference on the potash question reaches an agreement.

A committee of the Illinois Senate reports the impossibility of U. S. Senator Lorimer's election without corruption.

18.—The Illinois Senate calls upon the U. S. Senate for another investigation of the Lorimer election.

The University of Vermont chooses as president Guy Potter Benton, President of Miami University.

19.—The government's suit against the Lumber Trust, alleging unreasonable restraint of trade, is begun at New York.

23.—A resolution passes the House granting statehood to Arizona and New Mexico, but requiring them to reconsider certain provisions of their constitutions.

The new building of the New York Public Library is opened.

25.—The visiting American battleship squadron is warmly welcomed at Copenhagen.

The battleship *Wyoming* is launched at Philadelphia.

26.—Russia promises more liberal treatment to Jewish travellers from the United States.

27.—Rt. Rev. Edmund F. Prendergast is appointed Roman Catholic Archbishop of Philadelphia.

29.—The Supreme Court orders the dissolution of the American Tobacco Co. under the Sherman law.

31.—The United States warns Portugal of Castro's organization in that country of a revolutionary expedition against Venezuela.

JUNE

1.—The Senate approves the reopening of the investigation of the Lorimer election.

2.—An American stock, Atchison common, is quoted for the first time on the Paris Bourse.

3.—Justices Lurton and Vandevanter, of the Supreme Court, are appointed a committee to revise the rules of practice in the federal courts of equity.

5.—Dickinson College chooses as president Eugene A. Noble.

7.—American potash interests notify the independent German producers that no shipments subject to the super-contingent tax will be accepted.

8.—A federal investigation of an alleged coke monopoly is begun at Pittsburg.

10.—The American fleet of battleships arrives at Cronstadt, Russia.

12.—The Senate concurs in the resolution providing for the direct election of senators, adding an amendment that such elections shall be under the control of the federal government.

19.—The United States officially recognizes the Portuguese republic.

20.—The wool tariff revision bill passes the House by a majority of 121.

The second Lorimer investigation is begun by a special Senate committee.

21.—The Senate's amendment to the direct-nominations bill is rejected by the House.

The dissolution of the "Powder Trust" is ordered by Judge Lanning, of the U. S. Circuit Court, Wilmington, Del.

The *Olympic* arrives at New York on her maiden voyage.

24.—The United States Circuit Court at St. Louis affirms the legality of the merger of the Southern Pacific and Union Pacific railroads.

26.—The "Cunningham claims," involving 5,250 acres of coal lands in Alaska, are declared invalid.

29.—P. P. Claxton is appointed Commissioner of Education.

JULY

1.—The Interstate Commerce Commission orders an investigation of all express companies engaged in interstate business.

2.—Bogota is permanently removed from the list of American consulates-general.

5.—The United States, Great Britain, France, Germany, and Italy submit a joint note to Haiti insisting on the prompt payment of claims of their respective citizens.

6.—The government brings suit against the Lehigh Valley Railroad to compel the separation of the coal-mining and transportation enterprises.

7.—The United States, Great Britain, Russia, and Japan sign a treaty abolishing pelagic sealing.

11.—The wreck of the "Federal Express," Washington to Boston, at Bridgeport, Conn., results in 14 deaths and many injuries.

12.—The Attorney-General recommends the dismissal of Dr. Wiley, head of the Bureau of Chemistry.

Hoke Smith, Governor of Georgia, is elected to the United States Senate.

16.—Twenty-one miners perish in an explosion in the Cascade mine, Sykesville, Pa.

17.—A bill limiting campaign expenses and providing for publicity of contributions in Congressional elections passes the Senate.

The Government brings suit against the Philadelphia & Reading Railway to

compel the separation of the coal and transportation interests.

19.—The Senate ratifies the arbitration treaty with Great Britain.

21.—The new 87-mile subway system of New York is awarded to the Brooklyn Rapid Transit Co.

22.—The Canadian Reciprocity bill, unamended, passes the Senate by a vote of 53 to 27.

State-wide prohibition is defeated in Texas by a majority of 6,000.

24.—The Interstate Commerce Commission orders freight-rate reductions for shipments crossing the Rocky Mountains westward.

The fur-seal treaty is ratified by the Senate.

26.—A bill revising the cotton schedule of the tariff is introduced in the Senate.

27.—A compromise wool-tariff bill passes the Senate.

29.—Opposition to the importation of American meat is announced by the Australian premier.

31.—The Standard Oil Co. announces a plan of dissolution.

AUGUST

1.—The farmers' free-list bill passes the Senate.

3.—The Senate amends and passes the reapportionment bill.

The House passes the Cotton Revision bill.

The arbitration treaties with Great Britain and France are signed.

4.—The government brings suit at Columbus to dissolve the soft-coal combination.

Admiral Togo, of Japan, arrives in New York.

8.—The Senate passes the bill admitting Arizona and New Mexico to statehood, with an amendment requiring Arizona again to vote on the recall of judges.

Ambassador John G. A. Leishman is transferred from Italy to Germany; Lars Anderson and Lloyd Bryce are appointed Ministers to Belgium and the Netherlands, respectively.

10.—The Senate's amendments to the Arizona and New Mexico statehood bill are accepted by the House.

14.—The House passes the wool tariff bill.

A bill dissolving the National Monetary Commission by Jan. 8, 1912, passes the Senate.

15.—The Senate passes the wool tariff bill.

The resolution admitting Arizona and New Mexico to statehood is vetoed by the President.

17.—The cotton bill is passed by the Senate with many radical amendments.

The wool tariff revision bill is vetoed by the President.

18.—The Senate adopts a resolution, admitting Arizona and New Mexico to statehood under conditions approved by Pres. Taft.

The farmers' free list bill is vetoed by the President.

An attempt to pass the wool-revision and farmers' free list bills over the president's vetos fails in the House.

19.—The revised statehood bill is passed by the House, and also the bill abolishing the Monetary Commission.

21.—The joint resolution of Congress admitting Arizona and New Mexico to statehood under specified conditions is signed by the President.

The House adopts the Senate's amendments to the cotton bill.

22.—The President vetoes the cotton bill.

The first session of the Sixty-second Congress adjourns.

25.—Twenty-eight persons lose their lives in the wreck of a Lehigh Valley train near Manchester, N. Y.

26.—Twenty-six persons are killed in a panic caused by a false alarm of fire in a moving-picture theater at Canonsburg, Pa.

SEPTEMBER

7.—Thos. S. Martin (Dem.) and Claude A. Swanson (Dem.) are elected U. S. Senators from Virginia.

10.—George Bakhmetiev is appointed Russian ambassador to the United States.

11.—The Chinese cruiser *Hai Chi* arrives at New York.

12.—The Third Conference of Governors convenes at Spring Lake, N. J.

15.—Pres. Taft dismisses the charges against Dr. Harvey W. Wiley.

16.—A racing automobile crashes through a fence at the Syracuse State Fair, killing 10 persons.

30.—A dam fails at Austin, Pa., causing the destruction of the town and the loss of 74 lives.

OCTOBER

2.—A committee of the U. S. Senate begins at Milwaukee an investigation of Senator Stephenson's election.

5.—Eight manufacturers and jobbers of wall paper are indicted in Cleveland, charged with violation of the anti-trust law.

6.—Two dams in the Black River, Wis., fail; the resulting floods destroy several lives and large amounts of property.

Dr. Guy Potter Benton is inaugurated President of the University of Vermont.

10.—Amendments to the California constitution accepted at a special election include the adoption of the initiative and referendum and the recall, and the extension of the suffrage to women.

14.—Ground is broken by Pres. Taft for the Panama-Pacific Exposition at San Francisco.

16.—Senator La Follette is endorsed for president at a convention of "progressive" Republicans at Chicago.

20.—Dr. L. H. Murlin is inaugurated president of Boston University.

21.—Peter S. Grosscup, Judge of the United States Circuit Court, Chicago, resigns.

25.—S. Alfred-Sze is appointed Chinese Minister to the United States.

Gov. Dix, of New York, signs an appropriation of $1,250,000 for the rehabilitation of the state library, destroyed in the Capitol fire.

26.—The government's suit to dissolve the U. S. Steel Corporation is filed at Trenton, N. J.

28.—Twenty are killed and over 30 injured in a wreck on the Union Pacific, near Cheyenne, Wyo.

NOVEMBER

7.—Elections are held throughout the United States.

9.—The Commerce Court grants a temporary injunction staying the order of the Interstate Commerce Commission affecting reductions in freight rates from the East to points west of the Missouri River.

Elmer Ellsworth Brown is installed as Chancellor of New York University.

10.—The Carnegie Corporation, for the perpetuation of Andrew Carnegie's educational philanthropy, is organized in New York with a capital of $25,000,000.

12.—President Taft arrives in Washington after a 57-day trip through 30 states.

16.—George Harris resigns the presidency of Amherst College.

18.—Gen. Bernardo Reyes is arrested at San Antonio, Texas, charged with preparing a military expedition against the Mexican government on American soil in violation of the neutrality laws.

19.—Six officials of the United Shoe Machinery Co. are indicted in Boston, charged with violation of the anti-trust law.

23.—The Argentine battleship *Moreno* is launched at Camden, N. J.

27.—A government suit against the "lumber trust" is begun at Denver.

Archbishop Farley, New York, Archbishop O'Connell, Boston, and Mgr. Falconio, Washington, are made cardinals at a consistory in Rome.

DECEMBER

1.—James B. McNamara confesses to the dynamiting of the Los Angeles *Times* building, and John J. McNamara to the dynamiting of the Llewellyn Iron Works, Los Angeles.

4.—The second session of the Sixty-second Congress begins.

John D. Rockefeller resigns the presidency of the Standard Oil Company, and is succeeded by John D. Archbold.

5.—President Taft's message, dealing with the single subject of trust control, is transmitted to Congress.

James B. McNamara is given a life sentence, and John J. a sentence of 15 years.

The Los Angeles elections, in which 70,000 women voted, result in the defeat of the Socialist candidate for mayor and the reëlection of George Alexander.

6.—The trial of 10 meat packers for violating the Sherman anti-trust law is begun in Chicago.

8.—The Vreeland Board reports its conclusion that the *Maine* was destroyed by an exterior explosion.

9.—Over 100 men are killed in an explosion in the Cross Mountain mine, Briceville, Tenn.

12.—The House passes the Sherwood "Dollar-a-day" pension bill by a vote of 229 to 92.

Arizona's elections for state officers result in the return of the entire Democratic ticket.

A mass meeting in New York to support the ratification of the arbitration treaties with Great Britain and France is broken up by German sympathizers.

13.—The House passes the Sulzer resolution demanding the abrogation of the Russian treaty by a vote of 300 to 1.

14.—The House passes a bill extending the eight-hour day to work done for the government by contract.

16.—The Russian Ambassador, M. Bakhmetiev, informs the President that the ratification of the Sulzer resolution would be considered an insult to Russia.

17.—At the direction of President Taft, the United States Ambassador notifies Russia of the abrogation of the treaty of 1832.

19.—The Senate ratifies President Taft's denunciation of the Russian treaty.

20.—The House concurs in the Senate resolution approving the President's denunciation of the Russian treaty.

The President's message on the wool tariff is transmitted to Congress.

21.—President Taft's departmental

message approves the Aldrich plan of currency reform.

Congress adjourns for the holiday recess.

25.—Gen. Bernardo Reyes surrenders to Mexican troops at Linares, Mexico.

28.—Governor Dix asks for the resignation of Dr. Alvah H. Doty as Health Officer of the Port of New York.

30.—The Federal Grand Jury at Los Angeles indicts six labor leaders for complicity in dynamite outrages.

FOREIGN CHRONOLOGY

JANUARY

1.—Gen. Juan Estrada is inaugurated President of Nicaragua.

4.—The Institute of France declares against the admission of women to membership.

7.—Prince Albert of Monaco grants a constitutional form of government.

10.—Manuel E. Araujo is elected President of Salvador.

Henri Brisson, Radical Socialist, is reëlected to the presidency of the French Chamber of Deputies.

11.—Twenty men are killed in a clash between Mexican regulars and Insurgents opposite Comstock, Tex.

Emilio Estrada is chosen President of Ecuador.

The Chinese National Assembly is dissolved.

17.—Haiti and the Dominican Republic sign a convention withdrawing troops from the boundary.

An insane man fires two shots at Premier Briand in the French Chamber of Deputies, one of which strikes M. Mirmam, Director of Public Relief.

18.—Colombian troops invade Peruvian territory.

19.—The resignation of Pres. Gondra of Paraguay is accepted, and Col. Jara is chosen his successor.

20.—Ecuador refuses to submit to the Hague its boundary dispute with Peru.

23.—Mme. Curie is defeated for membership in the French Academy of Sciences.

29.—Mexicala is captured by the Mexican insurgents.

The Portuguese government grants King Manuel a monthly pension of $3,300.

30.—Cracow University (Austria) is closed by the authorities, following a strike of the students in protest against the appointment of a German professor.

31.—The British Parliament assembles.

FEBRUARY

1.—Puerto Cortez is evacuated by Honduras government troops.

2.—A revolution begins in northern Haiti.

The Persian parliament authorizes the employment of five Americans as financial advisers.

5. — Mexican revolutionists under Orozco fail to keep the regular troops out of Juarez.

6.—The British Parliament is formally opened by King George; the Conservative leaders denounce the reciprocity agreement between Canada and the United States.

7.—Gen. Millionard, leader of the Haitian revolutionists, is executed.

8.—Mexican troops are defeated by the insurgents near Mulata.

An armistice is arranged between Pres. Davilla, of Honduras, and Gen. Bonilla, the revolutionary leader.

9.—Great Britain and Austria-Hungary agree to refer to the Hague disputes over existing treaties that cannot be settled by diplomacy.

13.—Following an explosion in the government barracks at Managua, Nicaragua, the country is placed under martial law and many high officials are arrested.

16.—Juarez, Mexico, is placed under martial law by Gen. Navarro; an unsuccessful attack is made on the insurgents at Mexicala.

19.—Japan denounces the existing commercial treaty with Canada.

21.—The Irish Parliamentary party decides to take no part in the coronation ceremonies.

22.—The Canadian Parliament formally declares political loyalty to Great Britain.

The veto bill passes the British House on its first reading.

27.—The French Premier, Aristide Briand, and his cabinet, resign.

28.—Antoine E. E. Monis accepts the invitation of Pres. Fallières, of France, to form a ministry.

MARCH

1.—Jose Battle y Ordonez is elected President of Uruguay.

2.—Manuel E. Araujo is inaugurated President of Salvador.

4.—The Honduran Congress appoints Francisco Beltran provisional President.

6.—The Mexican revolutionists suffer a severe repulse at Asas Grandes.

10.—As a result of a rebellion against the régime of Pres. Jara, martial law is declared in Paraguay.

11.—The Mexican government suspends constitutional guarantees.

The trial of 36 Camorrists for murder is begun at Viterbo, Italy.

12.—Mexican troops defeat a small force of revolutionists near Agua Prieta.

18.—Premier Luzatti, of Italy, resigns with his coalition ministry.

24.—Pres. Diaz receives the resignations of the Mexican cabinet.

25.—Señor de la Barra, Mexican ambassador to the United States, accepts the portfolio of Foreign Affairs in the new Diaz cabinet.

27.—Manuel de Zamacona y Inclan is appointed Mexican ambassador to the United States.

King Victor Emmanuel inaugurates the celebration of Italian unity.

28.—Several thousand wine growers of Aube protest against the French law excluding Aube from the champagne region.

29.—The Japanese Privy Council ratifies the commercial treaty with the United States.

The tercentenary of the King James version of the Bible is commemorated in London.

31.—The two headings of the Lötschberg tunnel meet.

APRIL

1.—Pres. Diaz's plan for governmental reform is presented at the opening of the Mexican Congress.

Premier Canalejas and the Spanish cabinet resign, following a debate on the Ferrer controversy.

2.—Premier Canalejas, of Spain, withdraws his resignation on condition of permission to reorganize his cabinet.

3.—Agreement to arbitrate the Webster claim is arrived at between Great Britain and the United States.

A new treaty of trade and navigation between Great Britain and Japan is signed.

Turkish troops defeat the Albanian insurgents at Scutari.

6.—The Russian Council of the Empire attacks the government for promulgating the Zemstvo bill.

7.—After several days' fighting Albanian insurgents defeat the Turkish troops.

10.—A republic is proclaimed at Canillas de Aceituna, Malaga, Spain.

11.—Rioting begins in the department of Marne, France, following the passage by the French Senate of a measure abolishing territorial delimitations for the production of champagne.

13.—A serious rebellion of Moroccan tribesmen is reported at Fez.

15.—American, British, French and German bankers participate in a $50,000,000 loan to China.

19.—The complete separation of church and state is decreed in Portugal.

23.—The first constitutional election is held in Monaco.

25.—An armistice is arranged between the Mexican insurgents and the government.

27.—France notifies the signatories to the Algeciras convention that French intervention in Morocco is necessary for the protection of foreigners.

A serious revolutionary outbreak occurs at Canton, China.

29.—The International Exhibition of Industries and Labor is opened at Turin, Italy.

MAY

1.—Five small towns near Canton fall into the hands of Chinese insurrectionists.

4.—The right to use aerial craft in war is confirmed by the Congress of International Law, at Madrid.

5.—The Anglo-Japanese commercial treaty is ratified at Tokio.

A woman suffrage bill passes the British House of Commons on its second reading.

6.—The armistice in Mexico comes to an end and hostilities are renewed.

8.—Lord Lansdowne's bill for the reform of the Upper Chamber from within is introduced in the British House of Lords.

Great Britain and China sign an agreement designed gradually to suppress the production and importation of opium.

Germany warns France of possible serious consequences of an occupation of Fez.

An imperial edict abolishes the Chinese Grand Council, and substitutes a constitutional cabinet of ten members.

10.—Juarez falls into the hands of the Mexican revolutionists, and its garrison are made prisoners.

Vice-President Diaz, of Nicaragua, assumes the presidency on the resignation of Juan Estrada.

11.—Francisco Madero is proclaimed provisional president of Mexico.

15.—The veto bill passes the British House of Commons on its third reading by a vote of 362 to 241.

Peace negotiations are resumed in Mexico between Madero and Judge Carbajal.

Prince Lidj Jeassu is proclaimed Emperor of Abyssinia.

16.—The British House of Lords passes the veto bill on its first reading.

20.—American, British, French and German bankers sign a $30,000,000 loan for the construction of railways in China.

21.—Peace is signed at Juarez be-

tween the Mexican government and the insurgents.

Henri M. Berteaux, French Minister of War, is killed and Premier Monis severely injured by the fall of an aeroplane at Issy-les-Moulineaux.

23.—The Imperial Conference convenes in London.

French troops arrive at Fez.

25.—Porfirio Diaz resigns as President of Mexico, and Francisco Leon de la Barra is chosen provisional president.

28.—The Republicans carry the Portuguese assembly elections by a very large majority.

31.—An explosion at Managua, Nicaragua, kills or wounds 120 soldiers.

JUNE

2.—The Imperial Conference in London recommends the ratification of the Declaration of London.

7.—Germany again warns France of the danger of a military policy in Morocco.

Riots again break out in the champagne districts of France.

8.—M. Schollaert, the Belgian Premier, and his cabinet resign.

12.—France announces her determination to deal with Spain on the Morocco question without conferring with other European powers.

14.—Twenty thousand seamen strike in British ports, demanding higher wages.

A new Belgian ministry is formed under the leadership of Charles de Broqueville.

19.—Portugal's first Constituent Assembly is opened.

22.—King George V and Queen Mary are crowned in London.

23.—The Monis ministry, in France, resigns.

26.—Pres. Fallières, of France, invites Joseph Caillaux to form a ministry.

Following defeat in a general election, Premier von Bierneth, of Austria, resigns.

JULY

1.—German troops land at Agadir, Morocco.

3.—The striking British seamen are granted most of their demands and return to work.

4.—The German cruiser *Berlin* is sent to Agadir, Morocco.

5.—Martial law is proclaimed throughout Paraguay.

10.—Russia informs Germany of her agreement with France on the Morocco question.

14.—A new ten-year treaty of alliance is signed between Great Britain and Japan.

18.—An American gunboat is sent to Haiti to protect American interests.

Mohammed Ali, the deposed Shah of Persia, begins an attempt to recover his throne.

20.—The Haitian revolutionists capture Cape Haitian.

22. — The American cruiser *Des Moines* is sent to Haiti to protect America interests.

26.—The Universal Races Congress opens at London.

28.—The Haitian revolutionists are defeated at Les Cayes; a fifth American warship is ordered to Haiti.

29.—The Canadian Parliament is dissolved.

AUGUST

1.—The Haitian revolution is successful.

2.—Twelve thousand dock laborers strike in London.

4.—President Simon, of Haiti, leaves the country.

8.—The British House of Lords passes a vote of censure on the Government by a majority of 214.

The London dock strike is extended to involve 70,000 men.

10.—The British House of Lords pass the veto bill in its original form.

The British House of Commons votes its members an annual salary of $2,000.

14.—Gen. Cincinnatus Leconte is elected president of Haiti.

Dock and railway employees strike in Liverpool.

17.—A general strike is declared on all British railways.

18.—The veto bill receives the Royal assent.

19.—The British railway strike ends with an agreement to refer the dispute to a Royal Commission.

Emilio Estrada is elected president of Ecuador.

The Portuguese National Assembly signs the constitution of the republic.

22.—The British Parliament adjourns to Oct. 24.

The "Mona Lisa" of Leonardo da Vinci is stolen from the Louvre.

24.—The Liverpool dock strike ends.

Manoel de Arriaga is elected first President of Portugal.

30.—Marquis Saionji succeeds Count Katsura as Premier of Japan.

SEPTEMBER

1.—Emilio Estrada is inaugurated president of Ecuador.

Serious food riots occur throughout France.

2.—Joas Chagas, Premier of Portugal, forms a cabinet.

At Potsdam, Germany, the statue

of Baron von Steuben, presented by the United States, is unveiled.

5.—Floods in the Yangste-Kiang valley, China, cause the death of many hundred natives.

6.—Persian troops defeat the forces of the deposed Shah near Teheran.

7.—A serious uprising occurs in Sze-Chuen province, China.

10.—Germany presents counter proposals for the settlement of the Morocco dispute.

11.—A violent eruption of Mount Etna is accompanied by extensive destruction of property.

12.—The opening of Port Arthur to merchant shipping by the Japanese is announced.

13.—France rejects Germany's counter proposals for the settlement of the Morocco dispute.

14.—Premier Stolypin, of Russia, is shot and fatally wounded at Kiev.

18.—A strike on the three principal railway systems of Ireland completely ties up railway traffic.

Vienna is placed under martial law, following several days' rioting over the high price of food.

20.—The British cruiser *Hawke* rams the *Olympia* off Southampton, England.

21.—The Canadian general election results in the defeat of the Laurier administration and the rejection of the reciprocity agreement.

The Bank of England raises its discount rate from 4 to 5 per cent.

Chinese troops relieve the besieged city of Cheng-Tu.

23.—M. Kokovtzov becomes Premier of Russia.

25.—Dmitri Bogrov, assassin of Premier Stolypin, is hanged at Kiev, Russia.

26.—The French battleship *Liberté* is destroyed by an explosion, with a loss of 235 lives.

27.—Italy presents to Turkey a statement of grievances and demands with regard to Tripoli.

28.—Persian troops defeat a large force of rebels near Savah.

29.—Italy declares war on Turkey, and the commander of the Italian fleet off Tripoli demands the surrender of the forts and town.

The Turkish cabinet under Hakki Bey resigns.

30.—France accepts the proposals of Germany for the modification of the Moroccan agreement.

Premier Lindman, of Sweden, and his cabinet resign, following a general election.

OCTOBER

1.—Francisco I. Madero is elected President of Mexico.

3.—The city of Tripoli is bombarded by the Italian fleet.

4.—Panama recalls Dr. Pocras, Minister to the United States.

Said Pasha forms a new Turkish cabinet.

5.—The Monarchist rebels in Portugal capture a few small towns in the North.

6.—Robert L. Borden accepts the premiership of Canada, following the resignation of the Laurier ministry.

Italian marines are landed and occupy forts in Tripoli.

7.—Gen. Luis Mena is elected President of Nicaragua.

8.—Turkey asks the Powers to intervene pending negotiations over Tripoli.

Hostile tribesmen in Morocco are defeated by Spanish troops, but with great loss.

10.—A satisfactory conclusion of the dispute over Morocco between France and Germany is announced.

11.—Earl Grey retires as Governor-General of Canada.

Italian transports arrive at Tripoli and land troops.

12.—The Chinese rebels occupy Hankau and Hanyang without opposition.

13.—H. R. H., the Duke of Connaught is sworn in as Governor-General of Canada.

14.—The Turkish Parliament assembles.

Revolutionists in Hu-Peh Province, China, capture Wu-Chang, the capital.

Yuan Shi-kai, former commander-in-chief of the Chinese army and navy, is recalled and appointed viceroy of Hu-Peh and Hu-Nan provinces.

15.—Mexican troops defeat a large force of insurgents, killing 500.

16.—The Italian fleet bombards Derna, destroying the forts.

Foreign bankers refuse an application of the Chinese government for a loan of $3,000,000.

18.—Chinese troops and rebels fight a drawn battle at Hankau.

19.—The Italian fleet bombards Berghazi, and troops occupy a part of the town.

20.—Hankau is retaken by the Chinese revolutionists.

24.—The British Parliament assembles for the Autumn session.

The blockade of Tripoli is raised.

Sian-Fu, the ancient capital, and Kin-Kiang are captured by the Chinese revolutionists.

25.—The Chinese National Assembly impeaches Sheng Hsuan-Huai, President of the Ministry of Posts and Communications.

26.—Sheng Hsuan-Huai, Chinese Minister of Posts and Communications, is dismissed.

27.—Three members of the Mexican

cabinet are dismissed because of the futile campaign against Zapata's rebellion.

Yuan Shi-kai is appointed military dictator of China.

Chinese troops recover Hankau from the rebels.

28.—Andrew Carnegie is elected Lord Rector of Aberdeen University.

30.—An imperial edict grants complete constitutional government to China.

31.—Baron Gautch von Frankenthurn, the Austrian Premier, and his cabinet resign.

NOVEMBER

2.—Yuan Shi-kai is appointed Premier of China.

3.—The terms of the agreement between France and Germany over Morocco are made public.

The Chinese revolutionists capture Shanghai.

Prince Chun, Regent of China, accepts the basic points of the new constitution proposed by the National Assembly.

5.—The Turkish ambassador at Washington calls upon the United States to intervene in Tripoli.

Turkish troops win a decisive victory over the Italians at Derna.

6.—Francisco I. Madero is inaugurated President of Mexico.

Russia presents an ultimatum to Persia, demanding apology for an alleged insult to a Russian consul, which the Persian government decides to ignore.

7.—Wu Ting Fang accepts the ministry of Foreign Affairs in the Chinese revolutionary government.

8.—Arthur J. Balfour resigns the leadership of the Unionist party in the British House of Commons.

Premier Chagas, of Portugal, and his cabinet resign.

9.—Canton and Foo-Chow surrender to the Chinese rebels.

10.—Andrew Bonar Law is chosen leader of the Unionist Party in the British House of Commons.

Nanking is sacked by Manchu forces and many hundred of the inhabitants are massacred.

14.—The crews of 13 Chinese warships of the Imperial fleet mutiny and go over to the revolutionists.

16.—The Canadian Parliament opens.

18.—Diplomatic relations between Russia and Persia are terminated.

19.—Ramon Caceres, President of the Dominican Republic, is assassinated.

Persia appeals to Great Britain for intervention in the Russian dispute.

22.—Persia accepts Great Britain's advice and decides to yield to Russia.

23.—Italy notifies the powers of her intention to blockade the Dardanelles.

27.—Chinese troops retake Han-Yang from the revolutionists.

29.—Russia demands the dismissal of W. Morgan Shuster, the American Treasurer-General of Persia.

30.—A three-day truce requested by the rebel leader at Hankau is granted by Yuan Shi-kai.

DECEMBER

1.—Persia refuses the demands of Russia's ultimatum, and Russian troops are ordered to the interior of the country.

2.—The Chinese revolutionists occupy Nanking.

Eladio Victoria is elected provisional President of the Dominican Republic.

The Mauson Antarctic expedition sails from Hobart, Australia.

6.—Prince Chun resigns the regency of China.

The national insurance bill passes the British House of Commons.

7.—The naval prize bill passes the British House of Commons.

8.—The German Reichstag is dissolved.

12.—The British House of Lords rejects the naval prize bill, thus repudiating the Declaration of London.

The coronation Durbar is held at Delhi, India.

15.—The British House of Lords passes the national insurance bill.

18.—Peace conferences between Imperial and revolutionary delegates begin at Shanghai.

21.—Yuan Shih-kai officially declares against the establishment of a republic in China.

The Persian Mejliss decides to appoint a commission of five to deal with the Russian ultimatum.

The French Chamber of Deputies ratifies the Franco-German agreement on Morocco.

22.—A bill is introduced into the Russian Duma providing for a tariff war against the United States.

Persia yields all points in the dispute with Russia and agrees to the dismissal of Mr. Shuster.

Emilio Estrada, President of Ecuador, dies suddenly at Guayaquil.

25.—W. Morgan Shuster is formally dismissed by the Persian government.

28.—The Chinese Emperor consents to leave the decision as to the form of government to a national convention.

29.—The peace conference at Shanghai decided that a national convention should decide the future form of government for China.

AMERICAN NECROLOGY

ABBEY, Edwin Austin, England, Aug. 1, aged 59; artist and illustrator.

ABRAHAM, Abraham, Brooklyn, June 28, aged 68; merchant and philanthropist.

ANDRADE, Cipriano, New York, June 19, aged 70; Rear-Admiral, U. S. N., retired.

ASHMORE, Sidney G., Schenectady, N. Y., May 22, aged 59; professor of Latin at Union College.

ATWILL, Edward F., Kansas City, Mo., Jan. 24, aged 70; Protestant Episcopal bishop of Western Missouri.

BAIRD, Julian W., Boston, June 26, aged 52; chemist, and dean of the Massachusetts College of Pharmacy.

BAKER, George Hall, New York, Mar. 27, aged 60; librarian emeritus of Columbia University.

BALL, Thomas, Montclair, N. J., Dec. 11, aged 92; sculptor.

BASCOMB, John, Williamstown, Mass., Oct. 3, aged 84; professor of political enonomy at Williams College; former president of the University of Wisconsin.

BELLEW, Kyrle, Salt Lake City, Nov. 2, aged 56; actor.

BIGELOW, John, New York, Dec. 19, aged 94; publicist, diplomat, and author.

BLISS, Cornelius N., New York, Oct. 9, aged 78; Secretary of the Interior in the McKinley cabinet.

BLOOMFIELD, Ira J., Mar. 26, aged 76; Brigadier-General, U. S. A., retired.

BOGERT, Wm. Strong, Feb. 16, aged 74; Rear-Admiral, U. S. N., retired.

BONACUM, Thomas, Lincoln, Neb., Feb. 4, aged 64; Roman Catholic Bishop of Lincoln.

BRADFORD, Gamaliel, Boston, Aug. 21, aged 80; banker, and author of works on political economy.

BRADY, Francis Xavier, Baltimore, Mar. 13, aged 51; president of Loyola College, Baltimore.

BRINCKERHOFF, Dr. Walter Remsen, Cambridge, Mass., Mar. 2, aged 37; an authority on leprosy and smallpox.

DE BROUGHILLIER-CHAVIGNY, Charles Marie Claude, Marquis, July 11, aged 54; lecturer, and professor of French literature and politics at Harvard.

BULLIS, John L., San Antonio, Tex., May 26, aged 70; Brigadier-General, U. S. A., retired.

BURKE, Daniel W., Portland, Ore., May 30, aged 70; Brigadier-General, U. S. A., retired.

CARRERE, John M., New York, Mar. 1, aged 52; architect of the New York Public Library and many other notable buildings.

CARSON, Hiram, Ithaca, N. Y., June 15, aged 82; professor emeritus of English literature at Cornell.

COLMAN, Norman J., Nov. 3, on train near St. Louis, aged 84; appointed by President Cleveland first Secretary of Agriculture.

CROWELL, Edward Payson, Amherst, Mass., Mar. 26, aged 81; professor emeritus of Latin at Amherst College.

CURTIN, John J., Jan. 1, aged 72; Brigadier-General, U. S. A., retired.

CURTIS, Edward L., New Haven, Conn., Aug. 26, aged 57; professor of Greek at the Yale Divinity School.

CURTIS, William Eleroy, Oct. 5, aged 60; journalist and author of historical works.

DEVINS, Rev. John Bancroft, New York, Aug. 26, aged 54; editor of the New York *Observer*.

DRYDEN, John F., Newark, N. J., Nov. 24, aged 72; founder and president of the Prudential Insurance Co.

DUDLEY, Edgar S., Johnstown, N. Y., Jan. 9, aged 66; Brigadier-General, U. S. A., retired.

DUDLEY, Irving B., Baltimore, Md., Nov. 27, aged 50; United States Ambassador to Brazil.

DUDLEY, William Russell, June 4, aged 62; author and emeritus professor of systematic botany at Stanford University.

EARLE, Alice Morse, New York, Feb. 16, aged 57; author of many books on Colonial history.

EASTMAN, Julia Arabella, Wellesley, Mass., Jan. 1, aged 74; founder of Dana Hall School for Girls, and writer of children's books.

EGGLESTON, George Cary, New York, Apr. 14, aged 72; author and former newspaper editor.

EHRICH, Louis R., London, Oct. 23, aged 62; art collector and dealer, and author of books on economic questions.

ELKINS, Stephen B., Elkins, W. Va., Jan. 4, aged 69; U. S. Senator from West Virginia and Secretary of State in Pres. Harrison's cabinet.

EMMONS, Samuel Franklin, Mar. 28, aged 70; an eminent geologist, for many years connected with the U. S. Geol. Survey.

EVANS, Mrs. Elizabeth Edson, Germany, Sept. 14, aged 79; novelist and contributor to reviews.

FITZGERALD, Oscar Penn, Aug. 5, aged 82; editor and author, Bishop of the Methodist Episcopal Church.

FLEMING, Williamina Paton, Cam-

bridge, Mass., May 21, aged 54; astronomer and curator of astronomical records at Harvard University.

FLUEGEL, Dr. Maurice, Baltimore, Feb. 15, aged 78; historian and scientist.

FOREST, John Anthony, San Antonio, Tex., Mar. 11, aged 73; Roman Catholic Bishop of San Antonio.

FOSS, Sam Walter, Somerville, Mass., Feb. 26, aged 53; poet and librarian.

FOSTER, Dr. Frank P., Aug. 13, aged 69; editor of the *New York Medical Journal*.

FRANCIS, Charles Spencer, Troy, N. Y., Dec. 1, aged 58; ambassador to Austria-Hungary, 1906-10.

FREEDEN, John Pierre, St. Louis, Dec. 2, aged 67; president of St. Louis University.

FREEMAN, John C., Madison, Wis., Apr. 10, aged 69; head of the department of English at the University of Wisconsin.

FREMONT, John Chas., Washington, Mar. 7, aged 61; Rear-Admiral, U. S. N.

FRYE, William Pierce, Aug. 8, aged 79; U. S. Senator from Maine.

FYLES, Franklin, New York, July 4, aged 64; playwright and critic.

GATES, John W., Aug. 9, aged 56; financier.

GIBSON, William C., Brooklyn, May 10, aged 73; Rear-Admiral, U. S. N., retired.

GOURLAY, Major William, Glendale, L. I., Dec. 29, aged 71; in charge of the Union secret service during the Civil War.

GREENLEAF, Chas. R., Sept. 3, aged 73; Brigadier-General, U. S. A., retired; an authority on medical hygiene.

GRIERSON, Benjamin H., Jacksonville, Ill., Sept. 1, aged 85; major-general of volunteers at the close of the Civil War.

GRIFFIN, Martin I. J., Philadelphia, Nov. 10, aged 69; historian, and founder of the American Catholic Historical Society.

GUILD, Curtis, Boston, Mar. 12, aged 84; formerly prominent as a journalist.

HARLAN, John Marshall, Washington, Oct. 14, aged 78; justice of the U. S. Supreme Court.

HARRIGAN, Edward, Brooklyn, June 6, aged 65; the veteran comedian.

HASTINGS, Thos. Samuel, New York, Apr. 2, aged 83; former president of the Union Theological Seminary.

HIGGINSON, Thomas Wentworth, Cambridge, Mass., May 9, aged 87; historian and essayist.

HITCHCOCK, Edward, Amherst, Mass., Feb. 16, aged 83; professor in Amherst College; a pioneer advocate of physical education.

HUGHES, Chas. J., Denver, Jan. 11, aged 57; U. S. Senator from Colorado.

HUNT, Chas. Wallace, New York, Mar. 27, aged 70; inventor and manufacturer of coal-handling apparatus.

INCH, Richard, Washington, Apr. 21, aged 67; Rear-Admiral, U. S. N., retired.

IVES, Halsey Cooley, St. Louis, Mo., May 6, aged 64; director of the St. Louis Museum of Art.

JANEWAY, Dr. Edward G., Summit, N. J., Feb. 10, aged 69; medical practitioner and teacher.

JOHNSON, Tom L., Cleveland, Apr. 10, aged 57; four times mayor of Cleveland.

KEITH, William, Apr. 13, aged 72; the California landscape painter.

KENDRICK, Rt. Rev. John Mills, Los Angeles, Dec. 16, aged 75; Episcopal Bishop of Arizona and New Mexico.

KILDARE, Owen, New York, Feb. 4, aged 46; novelist.

KINNICUTT, Leonard P., Worcester, Mass., Feb. 6, aged 57; expert on sewage disposal and water supply.

KNAPP, Dr. Seaman A., Apr. 1, aged 78; organizer and director of the Farmers' Coöperative Demonstration work in the South.

LAMBDIN, Alfred Cochran, Philadelphia, Nov. 8, aged 65; chief editorial writer of *The Philadelphia Ledger*.

LARNED, Chas. W., West Point, N. Y., June 19, aged 61; Colonel, U. S. A.; dean of the U. S. Military Academy.

LEARY, Peter, Feb. 13, aged 70; Brigadier-General, U. S. A., retired.

LEWIS (Wilson), Ida, Newport, R. I., Oct. 24, aged 72; "the American Grace Darling," for over 50 years keeper of the Lime Rock Light.

LIPPINCOTT, Craige, Philadelphia, Apr. 6, aged 64; publisher.

LITTLE, Chas. Joseph, Mar. 11, aged 70; president of the Garrett Biblical Institute of Northwestern University.

LOOMIS, Charles Battell, Sept. 23, aged 50; author and humorist.

LORD, Nathaniel Wright, May 23, aged 57; chemist and professor of mineralogy and meteorology at Ohio State University.

MCCOOK, John James, New York, Sept. 17, aged 66; lawyer, conspicuous for gallantry during the Civil War.

MCDONALD, John B., New York, Mar. 17, aged 66; contractor; builder of the New York subway.

MACKAY-SMITH, Alexander, Philadelphia, Nov. 16, aged 61; Protestant Episcopal Bishop of Pennsylvania.

MACOMB, David B., Washington, Jan. 27, aged 84; Rear-Admiral, U. S. N., retired.

MALLALIEU, Rev. Dr. Willard Francis, Auburndale, Mass., Aug. 1, aged 83; Bishop of the Methodist Episcopal Church.

MALLORY, R. DeWitt, Springfield, Mass., Jan. 29, aged 60; president of the American International College.

MARCH, Francis Andrew, Easton, Pa., Sept. 9, aged 86; professor of English language and comparative philology at Lafayette College.

MATTHEWS, Edmund O., Cambridge, Mass., Jan. 30, aged 75; Rear-Admiral, U. S. N., retired.

MORGAN, Michael R., St. Paul, Minn., Sept. 16, aged 78; Brigadier-General, U. S. A., retired.

MORTON, Paul, New York, Jan. 19, aged 54; president of the Equitable Life Assurance Society and Secretary of the Navy in the Roosevelt cabinet.

NASH, Francis Philip, Geneva, N. Y., Feb. 5, aged 75; professor emeritus of Latin in Hobart College.

NAZRO, Arthur P., Feb. 16, aged 63; Rear-Admiral and former Medical Director, U. S. N., retired.

NORTON, Chas. Stuart, Westfield, N. J., June 24, aged 74; Rear-Admiral, U. S. N., retired.

PARET, Wm., Baltimore, Md., Jan. 18, aged 85; Bishop of the Protestant Episcopal Church of Maryland.

PARKMAN, Dr. Thos. Dwight, Sept. 8, aged 67; professor of anatomy at Harvard.

PHILLIPS, David Graham, New York, Jan. 24, aged 43; novelist.

PIERSON, Rev. Dr. Arthur Tappan, Brooklyn, June 3, aged 74; authority on missions and editor of the *Missionary Review*.

PULITZER, Joseph, Charleston, S. C., Oct. 29, aged 64; proprietor of the New York *World* and the St. Louis *Post-Dispatch*.

PYLE, Howard, Florence, Italy, Nov. 9, aged 58; artist and author.

REED (McCullough), Myrtle, Aug. 17, aged 37; novelist.

REEDER, Wm. H., New York, Jan. 24, aged 62; Rear-Admiral, U. S. N., retired.

RICHARDS, Ellen H., Jamaica Plains, Mass., Mar. 30, aged 68; expert in sanitary chemistry.

ROBIE, Edward D., Washington, June 7, aged 79; Rear-Admiral, U. S. N., retired.

ROBINSON, Wm. C., Washington, Nov. 6, aged 77; dean of the law school of the Catholic University, and former dean of Yale's law department.

RYAN, Patrick J., Philadelphia, Feb. 11, aged 79; Roman Catholic Archbishop of Philadelphia.

SANDS, James Hoban, Washington, Oct. 27, aged 67; Rear-Admiral, U. S. N., retired.

SCHLEY, Winfield Scott, New York, Oct. 2, aged 72; Rear-Admiral, U. S. N., retired.

SCUDDER, Samuel H., Cambridge, Mass., May 17, aged 74; naturalist and author.

SHALER, Gen. Alexander, New York, Dec. 28, aged 84; Civil War veteran.

SHEPARD, Edward M., New York, July 28, aged 61; lawyer, and prominent leader of the Democratic party.

SMITH, Joseph Rowe, Feb. 11, aged 80; Brigadier-General, U. S. A., retired.

SOLEY, James Russel, New York, Sept. 10, aged 60; lawyer and author of works on naval history.

SPERANZA, Carlo Leonardo, June 17, aged 70; professor of Romance languages at Columbia.

SPERRY, Charles Stillman, Waterbury, Conn., Feb. 1, aged 63; Rear-Admiral, U. S. N., retired; commander of the world cruise of the Atlantic fleet 1908-9.

SQUIERS, Henry Goldsmith, London, Oct. 19, aged 52; former U. S. minister to Cuba and Panama.

STETSON, Charles Walter, July 2, aged 52; an American artist resident in Rome.

TAYLOR, John Yeatman, Washington, Nov. 16, aged 82; Rear-Admiral, U. S. N., retired.

TERRY, Silas W., Washington, Feb. 9, aged 68; Rear-Admiral, U. S. N., retired.

THOMPSON, Denman, Apr. 14, aged 77; actor, for many years in "The Old Homestead."

TRIPP, Bartlett, Yankton, S. D., Dec. 8, aged 69; ambassador to Austria 1893-7.

VANDERPOEL, John H., Chicago, May 2, aged 53; teacher of drawing and painting in the Art Institute of Chicago.

VINTON, Alexander H., Springfield, Mass., Jan. 19, aged 58; Bishop of the Protestant Episcopal Church of Western Massachusetts.

VINTON, Frederick Porter, Boston, May 20, aged 65; portrait painter.

WARD, Elizabeth Stuart Phelps, Newton, Mass., Jan. 28, aged 66; author.

WEBB, Gen. Alex. S., Riverdale, N. Y., Feb. 12, aged 76; General, U. S. A., retired; former president of the College of the City of New York.

WELLS, Davis C., Hanover, N. H., June 12, aged 53; professor of sociology at Dartmouth.

WHITAKER, Ozi W., Philadelphia, Pa., Feb. 9, aged 80; Protestant Episcopal Bishop of Pennsylvania.

WHITEHOUSE, Frederic Cope, New York, Nov. 16, aged 69; Egyptologist.

WHITNEY, Edward B., Cornwall,

Conn., Jan. 5, aged 53; Justice of the Supreme Court of New York State.

WILDE, George H. H., Boston, Dec. 3, aged 66; Rear-Admiral, U. S. N., retired.

WYMAN, Walter, Washington, Nov. 21, aged 63; Surgeon-General of the United States Public Health and rine Hospital Service.

FOREIGN NECROLOGY

AIRD, Sir John, London, Jan. 6, aged 77; builder of the Assouan Dam.

BEGAS, Reinhold, Aug. 3, aged 80; the eminent German sculptor.

BELL, Chas. Frederic Moberly, London, Apr. 5, aged 64; managing director of the London *Times*.

BELL, Joseph, Oct. 4, aged 74; an eminent Scotch surgeon, the original of "Sherlock Holmes."

BERTEAUX, Henri Maurice, Issy-les-Moulineaux, May 20, aged 59; French Minister of War.

BRUN, Gen. Jean Jules, Feb. 23, aged 61; French Minister of War.

BUNTING, Sir Percy William, London, July 22, aged 75; editor of the *Contemporary Review*.

CLARKE, Sir Caspar Purdon, London, Mar. 29, aged 65; director of the South Kensington Museum, and later of the Metropolitan Museum of Art, New York.

CLOTILDE, Princess, June 25, aged 68; daughter of King Victor Emmanuel II of Italy, and aunt of the present king.

CROFTS, Ernest, London, Mar. 19, aged 64; painter of battle scenes.

CRONJE, Gen. Piet A., Kerksdorp, S. A., Feb. 4; Boer leader in the war with England.

DICEY, Edward, July 7, aged 79; journalist, and author of historical works.

DILKE, Sir Chas., London, Jan. 26, aged 68; a prominent leader of the Liberal party.

FOGAZZARO, Antonio, Rome, Italy, Mar. 6, aged 68; novelist and advocate of liberal Catholicism.

FOWLER, Henry Hartley, Viscount Wolverhampton, London, Feb. 25, aged 81; a member of many British cabinets.

GALTON, Sir Francis, London, Jan. 17, aged 89; explorer and author, and founder of a chair of eugenics at the University of London.

GILBERT, Sir William Schwenck, May 29, aged 75; comic opera librettist.

GIROUARD, Desire, Ottawa, Can., Mar. 22, aged 75; senior judge of the Supreme Court of Canada.

GORST, Sir Eldon, July 12, aged 50; British Agent and Consul-General in Egypt.

GUILMANT, Felix Alexandre, France, Mar. 30, aged 74; organist and composer.

HART, Sir Robert, Sept. 20, aged 76; the British expert on Chinese finance.

VAN'T HOFF, Prof. Jacobus Henricus Holland, Mar. 2, aged 59; an eminent chemist, author of an elaborate treatise on physical chemistry.

HOOKER, Sir Joseph, London, Dec. 11, aged 95; surgeon and naturalist.

ISRAELS, Josef, Aug. 12, aged 87; the eminent Dutch painter.

KOMURA, Marquis, Tokio, Japan, Nov. 24, aged 56; Japanese diplomat and administrator.

LEWIS, Sir George, London, England, Dec. 7, aged 78; eminent criminal lawyer.

MAHLER, Gustav, May 18, aged 50; composer and late conductor of the orchestra of the Philharmonic Society of New York.

MARIA PIA, July 5, aged 63; formerly Queen Dowager of Portugal.

NERUDA, Mme. Norman (Lady Halle), Apr. 15, aged 71; violinist.

NIZAM-UL-MULK, Asaf Jan, Aug. 29, aged 45; premier prince of the Indian Empire.

NORTHCOTE, Baron, Sept. 29, aged 65; former governor-general of Australia.

PAGET, Rt. Rev. Francis, England, Aug. 2, aged 60; Bishop of Oxford.

PIERANTONI, Augusto, Mar. 12, aged 70; the eminent Italian authority on international law.

ROBERTSON, Rt. Hon. Edmund, Baron Lochee, Sept. 14, aged 66; a British authority on American affairs.

VON ROTHSCHILD, Albert, Vienna, Feb. 11, aged 67; banker and financier.

ROUVIER, Maurice, France, June 7, aged 69; twice Premier of France.

RUSSELL, William Clark, London, Nov. 8, aged 67; writer of sea stories.

SAYID ABDUL AHAD, New Bokhara, Jan. 5; Emir of Bokhara.

SPIELHAGEN, Friedrich, Feb. 25, aged 82; the eminent German novelist.

STANNARD, Mrs. Arthur ("John Strange Winter"), London, Dec. 14, aged 55; novelist.

STOLYPIN, Peter A., Kiev, Russia, Sept. 18, aged 50; Premier of Russia.

STRETTON, Hesba, England, Oct. 9, aged 70; novelist.

SVENDSEN, Johann Severin, June 14, aged 70; composer.

VON UHDE, Fritz, Feb. 25, aged 63; the German historical and genre painter.

ZIEM, Felix, Paris, Nov. 10, aged 90; celebrated painter of Venetian scenes.

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